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TUBERCULIN AND THE LIVING CELL:

An Inquiry as to How the One Aids the Other in the Fight Against Tuberculosis.¹

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THE wonderful discovery of the bacillus of tubercle had not been demonstrated a longer time than might be reasonably expected before its consequent—the specific cure of tuberculosis—was (it now appears, too hastily) given to the world by the same earnest student of nature, Robert Koch, of Berlin.

The history of these two great discoveries is interesting and familiar to every student of medical progress, and needs no repetition here. But what is most remarkable is the present attitude of the great mass of the medical profession toward this second discovery—tuberculin—now, nearly a year and a half after its having been given out for use in America. The failure of distinguished men in using the remedy, according to the rules laid down by its discoverer, seems to have led to a feeling almost universally hostile to its employment. Editorial comments in medical journals are sneering and derisive in tone; authors in sections of the American Medical Association refer to the “failure” of tuberculin as a positive conclusion; and writers in medical periodicals continue, as of yore, to pronounce the edicts of their own conclusion—that there is no such thing as a specific for tuberculosis.

A few weeks ago an Associated Press despatch went the rounds that a certain Dr. A. M. Brown had announced in a medical meeting in Cincinnati that Professor Koch had acknowledged to him personally that “tuberculin was a failure.” Knowing that the statement must be false, I wrote to Professor Koch, and have just lately received his reply. It gives me great pleasure to be able to refute such a slander of one who is doing so much for his fellow-men. Dr. Koch writes me that neither he nor his assistants know Dr. A. M. Brown, of Cincinnati, who, however, like others, may have visited the laboratory. His statement that “much of his time was spent in the laboratory of Professor Koch is false, and when he says that I have told him that tuberculin is a

failure he states an impertinent fabrication.” Professor Koch goes on to say that he has “the same belief in tuberculin as in the beginning. If it is used in the early stages of tuberculosis it will be highly useful.” His experience is that this effect is a cure, or *Heilung*. “It is essential to discover the disease in time, which is best done with this material. To any one,” Koch concludes, “who has ever spoken to me about it, I have never made any different assertion than the foregoing.”

To the great majority of persons one of the most convincing modes of argument that can be used with reference to tuberculin is to deride the physician who would give his patient a remedy that he would not take himself. To a logically disposed and naturally suspicious layman this assumptive argument is conclusive, and the fearful idea seems to find a favorable culture-field, not only among laymen, but among professional men, because of the incomplete knowledge of Nature's laws and the undeveloped state of bacteriologic science.

A considerable experience with tuberculin during the past fifteen months, under conditions well calculated to enable one to judge of its peculiar and best effects, warrants me in saying that I would not hesitate to employ the remedy in my own case if I should again find myself tuberculous and be convinced of its need, as I have been convinced in the cases in which I have used it. This so-called “failure” of Koch's lymph has not been essentially in tuberculin, but rather in the inability of the medical mind to comprehend the method and the conditions requisite for its success. Nevertheless, the *receiving* medical practitioner, especially if he be handicapped by incompetency, should not be compelled to bear the blame that belongs chiefly to the *giving* originator of such a theory. Let me here say, that in criticising the rules promulgated when this new method of treatment was given to the medical profession I do not wish even to seem to detract from the renown due to the great discoverer. It is glory enough for one man to have illuminated the dark regions of the etiology of tuberculosis, and to have set the medical world thinking and working as has Professor Koch.

However, a different application of Koch's discovery seems to be positively demanded, so that sources of error may be eliminated and a successful line of action be marked out for the largest possible number of medical men.

It was my own belief from the commencement

¹ Read at the Ninth Annual Meeting of the American Climatological Association, held at Richfield Springs, June 22, 23, and 24, 1892.

ditions. This latter class includes some or all of four diagnostic cases recorded as too acute or too generally infected for treatment with tuberculin. The good general condition of those dismissed previously to six months ago speaks better for the permanency of the effects than I had anticipated. It is an open question yet, however, when a person once tuberculous is absolutely free from taint—that time alone can determine.

Among the important questions to be considered is:

The modus operandi of tuberculin in tuberculous tissues.

In my report on this subject to the Colorado State Medical Society last year, I advanced a theory of the action of tuberculin which I much wish bacteriologists would either refute or more fully elucidate than, so far as I am aware, has yet been done. This theory or explanation was based upon the power of living cells to repair injuries to themselves independently of other parts of our body. This idea not only recognizes the power of the tissues to reproduce their like, but also indicates an independent thought of Nature that takes some cognizance of the extent of the injury and the quality of the injuring agent. The directness with which the hypodermatically introduced antitoxine of tuberculosis, or whatever else it is in tuberculin that constitutes its active principle, goes to the highly susceptible tuberculously affected tissue and there stimulates a healing process, is strongly suggestive, if not proof-positive that there is a natural susceptibility of those affected cells, because they are thus diseased. This effort in the direction of healing is an exaggeration of any attempt at repair previously made—a function involving purpose and selection, not heretofore attributed to the ultimate divisions of the living body.

Histologists do not appear to have yet fully comprehended these functions of the living cell; yet some of us practical physicians are convinced, both by experience and by analogy, of certain specific effects of tuberculin, and invite biologists, histologists, and bacteriologists to explain the facts and physical evidences upon which our conviction is based. Is the demand unreasonable? The histologists can describe, as Richard Garnet, of London, has nicely done, what connective-tissue cells are; how, as nucleated corpuscles, they variously lie in a matrix, through the interstices or minute channels of which granular or wandering cells freely pass, on missions of supposed utility, and in which spaces the lymphatics find their terminal ramifications—all of which suggest an intimate relation between the lymphatic system, the white corpuscles of the blood, and the connective-tissue cells—in other words, the means of repair or the fibrous healing-process. Yet neither this histologist nor any other can tell any better than

you or I how the life-principle in these cells enables them to change their form, to increase their number, and to exhibit a power of choice and self-direction of action according to the various demands made upon them, such as is observed in a higher order of living beings.

It may be that this contemplation of the living cell, rather than the great complexity of minute forces—the animal body—will bring us nearer to the desired solution of the mystery of *life*. It is only nearer, however; the goal is not reached. Here, in the living cell, followed down to the minutest subdivisions of which a powerful lens will allow us to judge, is *life*, existing separately and independently, as well as in combinations. These associations are either harmonious or in controversy with other microscopic existences. Here, in the region of the living cell, is waged an incessant, many-sided warfare between living *constructive* and equally living *destructive* cells, compared with which, as numbers go, the wars of nations are as nothing; and there is no cessation until either the allotted end of life of all these cells is reached, or is anticipated by the death of the individual.

As to any difficulty others may have in accepting my explanation of the special action of tuberculin on the living cell, if study and reflection have the same effect upon their minds as they have had upon mine, the operation will grow in simplicity and naturalness. It is quite possible, I will admit, that my own vision is influenced by the *fibroid* glasses through which I am inclined to look, in the explanation of Nature's choice of the healing process in the arrest of chronic pulmonary phthisis. This view is based upon the observation of nearly 4000 cases, under climatic and other conditions, which have shown a greater amount of Nature's reparative processes than I believe has been shown by any like collection of similar invalids. Besides, is it not best, if possible, to explain these intricate effects upon natural grounds? For instance, is it not preferable to hold the theory that the formation of vomicae in the lungs, of anal fistulae, of rectal ulcers, etc., in the tuberculous are corrective excreting processes, rather than meaningless diseased foci, not to mention the natural efforts at elimination as indicated by septic chills and fever, odorous perspiration and colliquative diarrhea? We look upon these as the outward expressions of an inward warfare between the myriads of bacilli and the greater or less number of living cells.

The explanation given seems to me to be on the same line with the recent efforts among distinguished German experimenters, Ehrlich, Kitasato, and others, to find in animals a natural opposing element to toxic principles. Their success in fixing upon the juice of the thymus and lymphatic glands

as attenuating or neutralizing the toxic principles of typhus, diphtheria, tetanus, etc., is to me a wonderful discovery, not so very unlike that of vaccination for smallpox; yet showing that the animal system is by Nature furnished with the means, could we only discover them, to combat "every ill that flesh is heir to."

Then if, as is true, the known and appreciated effects, in tuberculous tissue, of tuberculin when rightly administered differ very little from the natural processes of cure to which the profession has all along been trusting, that harmony of action is a good guide to be governed by. Physicians have always tried, and I fear they always will, to assume the credit that rightly belongs to a patient through an unrecognized *vis medicatrix naturæ*. One cannot intelligently and fairly compare the excellent descriptions of cured lesions in tuberculous lungs, in persons dying of other diseases (so well described in a paper lately read before the New York Academy of Medicine by Dr. H. P. Loomis), with the known effects of contraction in affected lung-tissue and shrinking of cavities due to the action of tuberculin, and not feel convinced that the two processes are so similar as to be practically alike—a natural method of healing.

For the purpose of a minuter description of the treatment with tuberculin I will divide the effects into three divisions: first, external, at the point of injection; second, general or systemic; third, internal lung-reactions. That no confusion with other kinds of reaction to tuberculin may be possible, I will confine this part of the description to the third division, or the *local effects* in tuberculous lung-tissues, and to the principal physical signs by which they are recognized. I will also separate the third division into three subdivisions: (1) hyperemia, (2) congestion, (3) necrosis. These are not stages, as in the progress of a disease like pneumonia, but different results due either to the size of the dose or to the susceptibility of the patient.

The first effect, that of *hyperemia* of the affected lung-tissue, is to be looked for in cases in which there exists moderate susceptibility, with encapsulated bacilli or slight tuberculous infiltration, or more advanced conditions if there be a response to very small doses of tuberculin. There is probably an increased flow of blood to the affected part, and also an attraction of leukocytes, as shown in the experiments of T. Mitchell Prudden, who found that when dead bacilli are injected into living tissue, the white blood-cells are attracted in great numbers to the point. The same thing happens if the bacilli are alive, according to Dr. Bennet S. Beach, of New York. Here is to be found the process of elongation of these attracted cells, and their conversion into connective-tissue elements for the ul-

mate purpose of strangulating or suffocating the imprisoned bacilli. This is sufficient, if kept up, to do more than simply arrest the tuberculous process. It inaugurates a cure.

The physical signs of this reactionary effect, as I think I was the first to point out in my last year's report, consist mainly in a *harsh, puerile, or an exaggerated broncho-vesicular breath-sound*, as heard with the stethoscope over the affected or reactionary area. This is an exaggeration of what was heard before the tuberculin reaction, or it is heard in localities in which the breath-sound was previously inaudible or entirely different. It is not an evanescent effect, but usually continues, though in a lessened or lessening degree, during the whole course of treatment.

The second division of the reaction to tuberculin, that of local *congestion*, is an exaggeration of the first effect, to the extent of more or less local inflammatory engorgement. The greater swarming of the leukocytes and constructive or defensive cells to the infected areas may be so marked as to somewhat impede the circulation of blood therein, and dyspnea will be caused, with or without an exalted or depressed state of the nervous system—a feverish exhilaration or perhaps a fear of impending suffocation or harm. Sometimes there is even slight hemoptysis. Now, the process of elimination, under certain conditions, is indicated by the local appearance of moist râles, which more or less obscure the usually dry condition characteristic of the reaction to tuberculin in the affected tissue. It is here that the danger of reinfection may threaten if these moist râles are found in inefficiently ventilated portions of the lung. If the pyrexia is high, and appears late, especially if it is prolonged at a high point on the following day, the indication of a septic state (which may be the ushering in of a necrotic process in a tuberculous area) is so strong that the greatest caution must be exercised lest the destruction of the most affected spot occur. Previously to this, with or without the advent of moist râles, there is likely to be an increase of expectoration, with increased throwing off of dead, or dead and live, bacilli. This is followed by a decided lessening of expectoration as well as of the contained bacilli. Percussion does not afford nearly as much information as does auscultation. However, if from imperfect lung-ventilation, with or without the presence of moist râles, an occluded region is made known by an increase of dullness on percussion, an increased resonance is quite sure to follow the opening up of the affected lung afterward, and the appearance of the drying and contracting stage, which is the expected later beneficial effect of tuberculin.

The third and worst effect of tuberculin is *necrosis*, which I claim should always be avoided if possible.

The increased number of cells and cell-elements that crowd around the tuberculous nodules, or into and around affected areas, furnish a new, highly inflammatory substance, largely composed of giant or nucleated cells. By the multiplication and breaking down of these the circulation is shut off on the one side, the tuberculous tissue being on the other; the result is death of that tissue, or *necrosis*. The enemy and the containing tissue have both been destroyed together in the general shrinkage and sloughing that have thus been inaugurated. An enormous number of bacilli may then be thrown off in the sputum, which may also contain elastic fibers, shreds of lung-tissue, and pus-cells.

Meantime, Nature's effort at repair, if possible, corresponds with the extent of the injury in the affected area, and her process of infiltration and fibrous contraction is inaugurated, which may be the cure of the patient so far as that affected spot is concerned. However, the risk and shock to the individual, the deprivation of breathing-space, or involvement of other tissues, may be too great, and a more conservative and waiting plan of treatment ought to be followed. It should be borne in mind that all three of these degrees of effects may exist at the same time in different parts of the same lung.

The success of treatment with tuberculin rests upon many precautions, or upon favorable conditions to be secured by the physician in charge. Among these are: 1. The proper selection of cases. 2. As thorough a knowledge as possible of the physical condition. 3. The natural resistance of the tissue. 4. The intensity and extent of the tuberculous infection; and 5. The gradation of the dose.

The selection of cases suitable for treatment with tuberculin is a most important consideration. It is by exclusion of unfavorable conditions that mistakes are to be avoided. Besides, here in Colorado, I do not think it necessary to subject patients to this additional trouble, anxiety, and expense, who are so slightly affected and otherwise so well suited to the climatic cure, that they are likely to recover anyway. So it happens that I have refused or decided not to employ tuberculin in treatment in probably twice as many cases as those in which I have employed it.

An important consideration is the ventilation of the affected lung. For, if it be true, as the experimenters state, that in culture-experiments five or six days elapse before tubercle-bacilli begin to be reproduced, then when the bacilli are squeezed or carried out from the tissues into the lung-spaces or bronchial tract they must be removed by expectoration before the expiration of that time, or reinfection will occur. It would be better to leave the bacilli encapsulated than not

to get rid of them when they are set free. If the action of tuberculin is expected to take place around the root of the lung or large bronchial tubes, the regions beyond may become convenient receptacles for the infectious tuberculous exudates when the contracting or healing process occurs in response to tuberculin. Thus, this question of lung-ventilation is, to my mind, second to no other, and it is a consideration that, it will be acknowledged, gives a great advantage to us who practise in Colorado, where the air is from a sixth to a third rarefied.

Now, the question of ventilation, together with the extent and nature of the infection and its results, fibroid or otherwise, can be so well determined that a thorough diagnostician can have confidence in his decisions as to the use of tuberculin. In addition to the usual proofs of a careful physical examination, strengthened by the clinical history of the case and the microscopic examination of the sputum, much direct information is to be gained by the use of the spirometer and manometer, in conjunction with the measurements of the respiratory movements of the right and left sides of the thorax respectively. The manometer gives the air-pressure that the air-cells will stand, and in a measure indicates the elastic tension, or amount of fibroid or connective-tissue healing that exists; while the spirometer tells the actual capacity of the lungs, which ought to be nearly in an inverse ratio to the amount of fibroid deposit, and also to the extent of the usually accompanying pleuritic adhesions. The rule that I have formulated for determining the respective ventilations of the two lungs (right and left), and which I always mentally follow in my own examinations, is as follows:

Suppose the normal spirometric record of a patient is only one half of what it should be for his height, and the expansions of the two sides are as one to two, then, if no defect or disease is noted in the better lung, it is well to assume that the lack of ventilation in the other lung is almost complete—that is, the half that is done is nearly all due to the good lung. For other variations in the bilateral measurements this rule can be correspondingly altered.

When it happens, as a result of the reaction to tuberculin, that the ventilation of a lung is defective, then, besides temporarily discontinuing the injections, there are mechanical means that will be sufficient to open up and clear out the suffocated regions. Among these are the use of the lung-compressor or emphysema-jacket,¹ the pneumatic cabinet, massage of the chest, horseback riding, and systematic

¹ This is an instrument I have lately devised for promoting the elasticity in overstretched and suffocated air-spaces, which, with my own spirometer and a new manometer that I have lately completed, Messrs. Truax, Greene & Co., of Chicago, are preparing to put on the market.

arm-exercise in the open air. I do not fear the result of this advice to take moderate and systematic exercise, for I have previously taken the precaution in these cases to determine that Nature has already commenced, through the fibroid process, to strengthen the affected tissues; and I have always refused (except for diagnostic purposes) to give tuberculin, unless the patient could come to my office. I long ago gave up the idea of keeping these patients penned up in a single building or sanitarium, as has been the custom in Germany. In Denver they spend much of the time on the splendid system of rapid-transit lines that radiate in all directions to the suburbs, and some have lived in adjoining towns, and come to the city for treatment from every two to five days, as directed. I am aware that in emphasizing the importance of exercise I am liable to clash with the views of many members of this Society. Several papers have been read the tone of which seems to me unnecessarily fearful of the results of exercise. A discussion of the question of "Rest in the Treatment of Consumption," at Colorado Springs, reported not long since in the *Climatologist*, appeared to be so one-sided as to give the impression that there was no opposition whatever among that excellent group of physicians to such a standstill policy. In the use of tuberculin it will never do. I would rather run the risk of over-action, or even hemorrhage from exercise, than, because of the lack of it, allow the dead or live bacilli to remain and reinfect the system.

Another important point to decide before commencing injections of tuberculin is that there exists *only* the fever of tuberculosis, and not, in addition, the septic-pyemic fever that attends the breaking-down of lung-tissue and the extensive caseation of tubercles. There is no reason to expect tuberculin to do any good in this second form of fever, but, on the contrary, aggravation of the previously existing septic state might naturally be expected, for, as Klebs, of Zurich, in a letter lately received, expresses it: "You will also have fever by the introduction of pyrogenic substances from out the destroyed bacilli; but this fever is very well supported, and will cease if all or the greater number of the bacilli are destroyed." The want of an appreciation of this fact may be at the bottom of the fear that so largely pervades the medical mind—*i. e.*, a suspicion that tuberculin contains proteid substances that will themselves cause the septic fever.

I believe that this fear is unwarranted, and springs from the non-recognition of the previously existing septic state; in other words, tuberculin is a better diagnostician than its too suspicious professional critic. The natural result of this state of affairs is the demand that an effort be made to eliminate these harmful ingredients, supposed to be

contained in tuberculin. Consequently, the chemistry of the extract is minutely gone into, and, according to Klebs, by treating it with platinum chloride, and filtering through alcohol, the alkaloid and harmful ingredients are thought to be separated, and the albuminoids, supposed to contain all the active healing principle, are saved, and finally constitute two and a half per cent. of the original tuberculin. I have not yet used any of this "tuberculocidin" of Klebs, nor Hunter's similar modification of tuberculin, for I do not need them, as I do not hold the same belief as they do as to the necessity of their procedures, and further, because I have a better guide than the usual fever-range, in the stethoscopic signs of reaction to tuberculin. Besides, Klebs's results with his tuberculocidin are no better than, if as good as, my own with tuberculin.

Dr. Libbertz writes me that tuberculin has been made constantly uniform from the commencement. Though the results in Dr. Kinnicutt's¹ cases, treated with Hunter's modification, were in the main favorable, I can make no use of them, because a constant stated dose was given at regular intervals, which is quite different from my plan—*i. e.*, the gradually increasing dosage for a given desired effect. I wish that we knew more about the composition of tuberculin and the chemistry of these substances proposed as substitutes. As the case now stands, I am rather inclined to agree with Koch, who says that much of the active principle of tuberculin goes through the dialyzer in making Hunter's modification, and, therefore, I conclude that both Hunter and Klebs are using a much diluted tuberculin—just as they ought to do, anyway.

Dr. Klebs claims that his tuberculocidin has an effect additional to that of tuberculin, in that it kills the tubercle-bacilli. The claim cannot be allowed, because others (Dr. Beach, of New York, for instance) have found the same destroying influence to belong to tuberculin, the proportion of the dead bacilli thrown off in sputum being variously estimated up to over 80 per cent. of the whole number. If Koch's extract exerts an injurious septic influence, certainly a patient of mine who has taken the injections for more than a year ought to have shown it by this time. This is a case of laryngeal tuberculosis in the third stage, fully reported in the *University Medical Magazine* for March, 1892. I gave him 180 milligrams on the Sunday before I left home. He always asks for a large dose as he comes on his weekly visit, saying that he feels better if he perceives some appreciable effect of the injection.

After all, perhaps, it is not strange that a fear of the consequences should generally exist among medical men, when we consider that the destructive

¹ New York Medical Record, May 21, 1892.

process of pus-formation and the constructive process of repair—connective-tissue growth—are so near each other, both originating in different degrees of inflammation under varying conditions. This thought grows in importance if it be considered that tuberculin, if given as Koch first directed, to produce necrosis, may favor this destructive process—as it will if given in too large doses, while, if given in smaller and appropriate doses, the effect will be constructive, with a return to a state of health.

The influence that tuberculin may have upon these processes is most interesting. The question has been raised by Prof. W. T. Councilman¹ whether or not the fibrinous exudation in the alveoli around the tubercle or in its neighborhood is a part of the tuberculous process? He considers that it is, because bacilli are found in this contiguous inflammatory tissue. Why should we not rather look at it as the natural reparative process excited by the central tuberculosis, the purpose of the fibroid process being the limitation of this destructive tendency? At the same time we will admit that the extension of tuberculous infection may be temporarily favored by the stasis of blood in this border-ground of the contest that is going on. In tubercles with centers undergoing caseation the fibrous tissue seems to be antagonistic to caseation—*i. e.*, the more there is of the one, the less there is of the other; sometimes a caseous mass resulting, and sometimes a fibrous nodule with a shrivelled nucleus at its center. In these nodules Cornil and Ranvier found bloodvessels, and rightly reasoned that in them, and not in the caseous nodules without vessels, the cells retain their vitality to resist the tuberculous process. Is it not quite possible that tuberculin acts as a special stimulant to these fighting cells, and that the decidedly diagnostic sign of the commencing fibroid process under treatment with tuberculin is proof that both blood-circulation and connective-tissue formation are advancing into the lines of the enemy—*i. e.*, the tuberculous stronghold?

Councilman says that the tubercle-bacilli are taken into the tissues from the communicating air-spaces by the white corpuscles, and Koch also claims that these white corpuscles are changed into epithelioid cells by the action of the bacilli contained in them. If this is so, why is it not reasonable to infer that the process of cure is the reverse of the foregoing—*i. e.*, that the contracting influence under the reactions of tuberculin leads to the breaking up and subdivision of these giant and epithelioid cells? These, the natural homes or protecting envelopes of the bacilli, after subdivision and still bearing their bacilli with them, become the

exudative cells, which sometimes crowd the air-spaces in the region presenting a local reaction to tuberculin. I have noticed that this connective-tissue increase, the most prominent feature of the healing process that takes place in connection with the employment of tuberculin, is likely to be accompanied with or preceded by an increase in this exudation. Does it not appear reasonable that this stage in the effect of tuberculin should be known and watched by the attending physician with the greatest care and caution!

Dr. Armand Ruffer, of the British Institute of Preventive Medicine, has lately asserted that it is the poisons excreted in the tissues by infectious microorganisms that attract the leukocytes to battle with the germs, and that the reason that in certain virulent cases this attraction is lost and the work of the defending leukocytes is ineffectual or feeble, is that these toxic principles are too generally distributed in the system—*i. e.*, in the blood-current, as well as localized in the tissues. Dr. Sternberg, of the U. S. Army, calls attention to the fact that Tizzoni and Centanni, experimenting upon infected guinea-pigs with Koch's lymph, stated that recovery is due to the development of an antitoxine that neutralizes the tuberculous virus. They seem to conclude that the antitoxine is developed in the tissues in consequence of the injection. Whether this is so, or if the antitoxine already exists in the tuberculin, as it is more reasonable to believe, further observation will have to decide. The influence is certainly specific upon tuberculous tissue. I could illustrate this by showing the gradual shrinkage of tuberculous glands on the side of the neck in a young woman among the unfinished cases in my list.

I have conceived the idea that perhaps the nodules that we have been accustomed to call tubercles are simply Nature's prison-vaults for the incarceration of the offensive bacilli; and, until someone proves the contrary, I shall not cease to suspect that the bacilli, when thus imprisoned, are deprived of nutriment for growth, or, perhaps, by pressure are prevented from multiplying, and that this perfected imprisonment constitutes the completeness of the state of "arrest" of pulmonary tuberculosis, whether by climate or otherwise, as heretofore accepted by the medical profession. Even more, the *policeman* function of the leukocytes, "the free lances of the body," may yet be shown to include the arrest of these bacillary intruders and detention within their own bodies until, having the power to do so, they can call to their aid those constructive and repairing carpenters—the connective-tissue cells—to build about themselves and their captured bacilli the strongholds intended for their permanent imprisonment.

If the foregoing figure is a reasonable representa-

¹ Article on "Tuberculosis," in Reference Handbook of the Medical Sciences.

tion of this inward struggle constantly going on in many of the human race, how very like a punishment for any future sins of omission or commission on the part of the tuberculous patient, as to the laws of healthful living, is the escape and multiplication in the body of these convict bacilli when once the resistance of the tissues is relaxed from lack of nutrition or nerve-support.

The difference is so great between tuberculosis in arrest, with the natural resistance of the tissues everywhere able to maintain their integrity, and tuberculosis of the lungs under full headway, with the living cells deprived of their power of successful resistance, as only to be faintly imagined by one thinking of the computations of bacteriologists. They compute that in this latter condition over twenty-one million bacilli are thrown off in the sputum of an individual each twenty-four hours, or fifteen thousand per minute. I do not know enough of the methods of division or growth of these germs to compute how many millions of bacilli yet remain in such a body, but this I do know, that that remedy must be a true specific for tuberculosis which bids so fair as tuberculin does to forestall such havoc, and not only aids in the arrest of the tuberculosis, but also supports the living cell in the supreme effort to eradicate the cause from the body. In view of the comparative failure of the usual internal antiseptic treatment of pulmonary tuberculosis by trying to saturate the system with supposed blood-purifiers, or the endeavors to reach the enemy by the use of germicidal inhalants, the physician of the future must come to the rescue of the living cell. In its fight against tuberculosis he will find, in rightly selected cases, the *antitoxine of tuberculin* an unrivalled aid to the best combination of climatic attributes, with sunshine, elevation, and dryness in the foreground, so that with every other attainable aid added, integrity and health may be preserved to the living cell.

**PREVENTIVE MEASURES FOR THE INDIVIDUAL
DURING TIMES OF ACTUAL OR THREAT-
ENED PREVALENCE OF CHOLERA.¹**

BY E. O. SHAKESPEARE, M.D.,
OF PHILADELPHIA.

I HAVE recently advanced elsewhere² some reasons why "the General Government should be supreme in the control of quarantine at all our frontiers," in the effort to keep cholera out of this country. I do not contend that State or municipal quarantine should be abandoned. On the contrary, even with the establishment of an efficient and judicious general quarantine as an outer line

of defence and protection to the *general welfare*, provided and maintained at the expense of, and controlled by, the General Government, without exaction of port-fees, the local, State, or municipal quarantine can well serve an extremely useful purpose as a powerful adjunct in protecting the health of the locality against the introduction and dissemination of infectious diseases, and may be supported as in the present manner. What I now urge, and have earnestly advocated, is that, for the protection of the *general welfare*, for which Congress, in the same article of the Constitution that grants it power to guard the country from the attacks of a common enemy and the invasion of a foreign foe is authorized to provide, the General Government, especially in such a dangerous juncture as the present, should be active, provident, vigilant, and supreme.

I am requested by the Directors of the Philadelphia County Medical Society to express my views concerning the question of "preventive measures for the individual during times of actual or threatened prevalence of cholera," and I cheerfully respond, as any other physician would, prompted by the hope of rendering some useful service to my fellow-citizens.

As the purpose of this communication is, to a great part, for popular instruction, I shall avoid as much as possible entering into detailed arguments and the discussion of abstruse theories, limiting myself mainly to an orderly arrangement of conclusions, well established, based upon the evidences to be found in my recent *Report on Cholera in Europe and India*, and in other publications relating to cholera that have appeared in various parts of the world since 1883.

In my opinion, Asiatic cholera, highly infectious and frightfully mortal as it usually is when it obtains a foothold amid ignorance, poverty, and squalor, is, fortunately—even in such a favorite locality—of all the dangerous epidemic diseases the most easily and certainly avoided by the individual, if only the proper precautions be constantly and scrupulously observed. Cholera-victims may be lived with, handled, nursed and treated, with absolute impunity if these *precautions be never once forgotten or neglected*. The cholera-poison does not infect the air even of the sick-room; it cannot be inspired with the breath; it does not enter through the skin, or through cuts, sores, or abrasions of the body. It enters through the stomach only, and assails by way of the intestinal canal.

In the human being it is in the intestinal canal only that this infectious material multiplies enormously, sometimes with extreme rapidity, generating a chemical poison that attacks and destroys the lining of the epithelium of the intestines—caus-

¹ Read at the meeting of the Philadelphia County Medical Society, held September 14, 1892.

² THE MEDICAL NEWS, September 10, 1892.

ing extensive flakes of the latter to be thrown off, while the raw surface thus exposed exudes great quantities of the fluids of the blood, constituting together the so-called rice-water discharges, frequently so rapid and copious—and which meanwhile is thence absorbed into the system, to play a formidable rôle in a direct and vicious attack upon the kidneys, heart, and nervous system. This infectious principle has been proved to be the so-called cholera-bacillus—an extremely minute vegetable parasite that multiplies in enormous numbers and with incalculable rapidity in the intestinal canal of the victim. Every drop of the evacuation of the bowels and of the stomach of a person who is suffering with Asiatic cholera contains thousands of these infectious parasites. These discharges and everything soiled or contaminated by them are therefore highly infectious and very dangerous. Cholera is never generated by fright, ill-health or constitutional weakness, filth, starvation, or anything else, unless this infectious principle be first introduced into the stomach. Without the actual presence and multiplication of the cholera-bacillus in the intestinal canal, an attack of Asiatic cholera cannot occur.

What, then, are the rational and reliable "preventive measures for the individual during times of actual or threatened prevalence of cholera?" They are crystallized in four words—*prompt isolation; thorough disinfection.*

Inasmuch as the safety not only of the health and of the trade of the locality and its immediate surroundings are involved, but also of a great State, and sometimes of nations in communication with it, are seriously threatened by the escape and spread of the infectious principle elaborated in and discharged from the intestines of the person suffering from an attack of Asiatic cholera, skilful and *constant attendance* is imperatively called for, and *should be provided at the public expense.*

Furthermore, that same public has a paramount interest and absolute right to be *assured* that every rational precaution against the spread and dissemination of the infectious agent be scrupulously and conscientiously enforced. This is tantamount to saying that the care of the attacked and of the dwelling, as well as the custody or close surveillance of all persons associated or in communication with him or it, should be under the strict control and direction of the jeopardized public, *through its own intelligent and responsible agents.*

The prevention of the spread of infection—of such enormous importance to the public—should, under no circumstances whatever, be entrusted in any degree to the ignorance or carelessness or conflicting interests of the inmates of the infected dwelling; neither should it be left to the chance of

uncertainty through the incompetence or neglect or whimsical notions or personal interests or lack of authority of the private physician. Of course this means temporary invasion of the private rights and restriction of the personal liberty of a few individuals—whose own security, however, is thereby enhanced—but the public safety demands a temporary sacrifice of private rights under these circumstances, and there should be no hesitation or vacillation in requiring it.

I do not mean to say by this that the family physician called in attendance by the sufferer should be excluded from the performance of his private duties; on the contrary, he should feel, in his capacity as an individual guardian of the interests of the public health confided to his care, that he also should be prompt and careful in the discharge of duty to his patient, and he should at the same time keenly appreciate his relations as well to the inmates of the threatened household as also to the general public. One of the first things which the family physician should do in the discovery of a patient who is suffering with symptoms that warrant any suspicion that the case may be either a commencing or a fully developed attack of Asiatic cholera is that, immediately he leaves the house, he should promptly send notification to the Board of Health, without any delay whatever.

So long as there are in the town or city threatened *only a few scattered cases of the disease*, the most strenuous efforts should be made to prevent the establishment even of a localized epidemic. The daily work of the private physician, if he be sufficiently watchful for the discovery of such scattered cases, will be a great adjunct to the efforts made by public health-officers in stamping out the infection before there is any chance that it may spread throughout the community.

Under the circumstances surrounding us at present, with cholera in the port of New York and the possibility of its arrival by any ship proceeding from Europe with emigrants on board, there is no little danger, as experience has so often proved, that the infectious germs may escape quarantine-inspection, and proceed with the ship's inhabitants, released from quarantine, to their ultimate destinations, and produce there the commencement of an epidemic.

It is a well-known fact that looseness of the bowels and other disturbances of the digestive apparatus very frequently precede the onset of an attack of cholera. Such cases should be regarded with suspicion and be promptly remedied. When the onset is so well marked as to leave little doubt in the minds of the experienced of its infectious nature, of course the most careless physician will act vigorously. On the other hand, attacks of so-called cholera-morbus are not infrequent, especially during the summer

and early fall months, among persons who are addicted to imprudences of any sort, especially of injudicious eating and drinking. These attacks are particularly likely to occur among immigrants who, for the first time in their lives, indulge in copious drafts of ice-water, eat ice-cream, green corn, and other such articles of food and drink.

I cannot too earnestly urge upon the medical profession the great importance of unusual watchfulness at this time for undue bowel-disturbances, especially for attacks of so-called cholera-morbus, particularly when they occur in persons recently landed from emigrant ships. An attack of what seems like cholera-morbus among this class of people should be invariably looked upon with suspicion, and in every such case the precautions should be taken of thorough disinfection of stools and prompt isolation of the patient until the real nature of the attack shall have been determined.

In connection with cholera-morbus, I may say that there is most indisputable authority for the assertion that the *clinical symptoms alone* are incapable of furnishing to the most skilful diagnostician living reliable evidence upon which he can speedily determine whether a case in charge is one of Asiatic cholera or of simple non-infectious cholera-morbus.

From the time that Malgaigne went to Warsaw, in 1832, to make the acquaintance of an unknown plague in Europe, until Dr. Robert Koch, in 1883, visited Egypt and India to investigate the same disease, many have been the eminent physicians who have left their homes to study cholera in distant regions, and many have been the exhaustive observations of the disease in all of its forms and characters which have been made by the most distinguished clinicians and pathologists of the world during the times when it has repeatedly ravaged their own lands. The whole category of symptoms and visible signs by which Asiatic cholera under its various guises manifests its presence had been so often the object of the keenest and most intelligent examination, and so frequently the subject of most learned disquisitions, that its prompt and unhesitating recognition might reasonably seem, when it appeared in Europe in 1884 and 1885, to have been a matter of no great difficulty.

But what is the truth? Look at the recent experience of France, and Spain, and Italy, in 1884 and 1885. In each the prompt, vigorous, and judicious action required for the extinguishment of the spark before it could burst into an uncontrollable conflagration was paralyzed by doubt and uncertainty concerning the real nature of the disease.

While epidemic cholera was surely planting itself in France in 1884, few physicians asserted its presence with firmness, while the many denied it most positively. To remove the hesitation which this

conflict of opinion naturally engendered, Drs. Brouardel and Proust were commissioned by the French Government to report upon the nature of the doubtful disease at Toulon. Those experienced physicians had the knowledge and the courage to unhesitatingly pronounce it epidemic cholera, but unfortunately they were unable to state its origin. On the other hand, Dr. Fauvel, Inspector-general of Hygiene, placed the weight of his high authority against that opinion, and reproached the commissioners with having uselessly alarmed the country and caused great damage to the commerce of France. Later, the National Consulting Committee of Hygiene officially declared that the disease was not Asiatic cholera, but was a benign cholera, non-contagious, and produced by local causes, and that it had nothing to do with importation from without, and possessed no power of epidemic dissemination. Added to these misleading statements was the impression produced by the majority of the medical press of that country in industriously supporting the assumption that the epidemic would limit itself to the locality of its outbreak, and would soon cease.

This history has repeated itself in the various declarations, official and private, concerning the nature of the present epidemic in Paris and its suburbs. The same may be said of the development period of cholera now at Havre, Antwerp, and Hamburg.

As in France, similar doubt and uncertainty and inaction existed in Spain at the commencement of the invasion of cholera in 1885. It is true that a few scattering cases of cholera, mainly confined to some localities in the province of Alicante, had appeared in 1884, but the epidemic which so frightfully ravaged Spain in 1885 undoubtedly spread from the town of Játiva, in the adjoining province of Valencia. After having lingered in that vicinity through the winter under the mask of *suspicious cases*, during the fourth week in March of that year the epidemic raised its head in that town. Public rumor to this effect, originating with the physicians of Játiva, soon reached the Governor of the province and the city of Valencia; and in response to the demands of the populace a special commissioner was dispatched to investigate. Arrived in Játiva, a few cases examined; and a hasty consultation held with the local board of health, an official declaration was hurriedly published that Asiatic cholera did not exist in that place; and later the provincial board of health confirmed this opinion. Nevertheless, the unknown mysterious disease continued to spread throughout the town, and, besides, rapidly invaded village after village, unchecked by any active opposition. Notwithstanding, as late as the 15th of April, the same provincial board of health formally congratulated the people upon the favorable course and slight importance of the disease, which was

even then officially looked upon as *only suspicious*. During this time of inaction and hesitation on the part of the authorities, there reigned the greatest anarchy of opinion among the local physicians. A few affirmed their belief that they were dealing with genuine Asiatic cholera; some insisted that the suspicious visitor was nothing more than the common sporadic cholera; others declared it to be a pernicious fever of choleraic type; many claimed that it was malignant malarial fever; yet others held that it was a kind of entero-gastritis; and not a few pretended that it was the bubonic plague, but without the boils. The whole history of the invasion of Egypt in the first place, and of France, Italy, and Spain later, is nothing but a repetition of similar doubts on the part of the physicians having to deal with the disease, and of inaction on the part of the local authorities whose business it was to adopt and enforce measures to stamp it out.

But why continue longer in narration of this disgraceful and unfortunate history of the doubts and contradictions and vacillations concerning the nature of the disease which have characterized that as well as all former visitations of Europe by epidemic cholera? It forcibly illustrates one most important fact.

That fact is, *unless the investigations of the German commission have brought to light in the presence of the cholera-bacillus a sure and unmistakable diagnostic sign of Asiatic cholera which can be quickly distinguished*, in spite of the great and valuable knowledge of the disease gained by the study of former epidemics, *we do not at present know how to recognize genuine Asiatic cholera in time to safely guard the people against its deadly power*.

In Egypt and in France and in Spain and in Italy the character of the disease and the consequent danger were not fully recognized until it was too late to arrest its destructive course, and thus it has been everywhere and at all times in the history of the march of epidemic cholera.

Fortunately for mankind, the observations and experience of the last nine years have at last placed at the disposal of the medical profession and of public health-officers most positive means of recognizing in a reasonably short time the infectious nature of the discharges of a suspected person by means of bacteriologic examination. The health-authorities should *invariably*—and the private physician whenever possible—resort without delay to this certain means of diagnosis in *every suspicious case*, and the suspected persons should be kept in strict isolation and surveillance until the results of such an examination be obtained. It is only in this manner that a population can be insured against the establishment of an epidemic following the appearance of scattered cases of choleraic diarrhea and

masked cholera, which, because of their lightness, may escape notice, or because of their similarity to other diseases may be mistaken for the latter. Let every physician, therefore, regard it as a part of his duty to the general public to vastly supplement the watchfulness of the health-officials in the effort to detect and isolate at the earliest possible moment the *few scattered cases* which almost invariably precede the establishment of a widespread epidemic of Asiatic cholera. Let no misplaced regard for the tender sensibilities or vigorous protests of his patients or of their friends induce him at such a time to attempt concealment or delay, in the hope that the attack may ultimately prove to be void of the dreaded character. There is reason to believe that the awful calamity which has befallen the city of Hamburg is traceable to the criminal neglect of a single man. Let every physician, therefore, fully appreciate the importance of his responsibility to the general public. Besides alertness in the discovery and promptness in reporting suspicious cases, the physician could perform a great public service by notifying the health-department of nuisances and defective plumbing, drainage, etc.

INDIVIDUAL MEASURES OF PREVENTION.

Means and Mode of Infection.—Since the infectious agent exists in the evacuations both from the stomach and from the bowels, various materials become capable of conveying the infection of this disease—such as clothing soiled with this matter; hands fouled with it; articles of food and drink which have been contaminated with it. It is by means of soiled clothing and personal effects, upon which this agent is preserved in a more or less moist condition, that the infectious principle is usually conveyed long distances, both by land and by sea. The contamination of watercourses and small streams by vomit or dejecta is perhaps the most frequent and certainly the most rapid means of producing a sudden and widely-extended outbreak of Asiatic cholera. The watercourses are not infrequently also contaminated by washing therein the personal effects of cholera-patients.

Regarding the comma-bacillus of Koch as the infectious agent, it has been established by numerous and exact experiments that this microbe is not only able to live for a considerable length of time in water, but is even capable of enormous multiplication therein, especially if the water contain a certain amount of organic or vegetable material. The use of such contaminated water for drinking, bathing, and culinary purposes is perhaps the most frequent mode of introduction into the human organism of the contagious principle of cholera infectiosa.

The universal practice of the watering of milk also renders this article exceedingly and especially

dangerous to children during periods of the prevalence of cholera; and, where extensive and sudden local outbreaks of the disease cannot be attributed directly to the use of contaminated water, it is generally the milk which conveys the cause of infection. Other articles of food are in a far less degree liable to contamination, but there are numerous examples of infection occasioned by thoughtless and accidental contamination of vegetables, fruits, and other nutritive material.

Experience has abundantly proved two laws which have an important bearing upon the spread of cholera: (1) *The tendency to infection varies exceedingly among individuals, and is with the majority small.* (2) *Disturbed conditions of the digestive apparatus greatly increase the susceptibility of an individual and render him far more liable to an attack after exposure to the infection.*

As has already been said, it is exceedingly improbable that the infectious principle is ever conveyed to the healthy by the medium of the air; it is certainly never transported to any considerable distance in this manner. It is very doubtful, if even possible, that infection may take place through the lungs. It is certain that it cannot be effected by cutaneous absorption. The disease, therefore, cannot be properly termed truly contagious in the common use of that word. It is extremely doubtful if there be a single well-authenticated case upon record in which the disease has been conveyed in any other manner than by the introduction of the infectious principle into the stomach.

Still, regarding the comma-bacillus of Koch as the infecting agent, it has been abundantly proved that the normal acid juices of the stomach are capable of destroying it. It is, therefore, not surprising that the examples are multiplied in which water and other ingesta known to be infected have been swallowed, intentionally or accidentally, by healthy persons, without harm. If, however, this living infectious principle, the comma-bacillus of Koch, escape beyond the lower end of the stomach and pass into the small intestine, the contents of which have an alkaline reaction, multiplication with enormous rapidity therein, elaboration in considerable quantity of the poisonous ptomaine, and the establishment of the disease which we recognize as Asiatic cholera become possible.

PROPHYLAXIS.

The considerations already advanced suggest prophylactic measures which experiment and experience have proven to be trustworthy. If the stomach be properly guarded against the introduction of the living infecting principle, the individual will be necessarily protected against the danger of an attack.

Protective measures may be considered from two standpoints: A, with regard to the person suffering from an attack of the disease; B, with regard to the healthy individual exposed to infection.

A. *With regard to the person suffering from an attack of the disease.* The evacuations from the stomach and the bowels should be immediately disinfected; if this is thoroughly accomplished, it is impossible for the infection to spread beyond the individual. The dejecta and the vomited matter should be passed into a vessel containing a quart or more of a strong solution of carbolic acid—one part to twenty of water—or of chloride of lime ten per cent. strong; and immediately after the evacuation a sufficient amount of the disinfectant should be added to make the whole quantity equal to the bulk of the evacuated material; the whole should then be gently stirred, and afterward allowed to stand at least twenty minutes, when it should be removed and emptied into a pit containing unslaked lime, and be immediately covered by a quantity of the same material.

The clothing of the patient, as well as the soiled bed-linen, immediately after removal, should be disinfected by thoroughly soaking for an hour or more in a large quantity (more than sufficient to cover them) of a strong solution of carbolic acid or chloride of lime one part to twenty; or they should be immediately subjected to the prolonged action of boiling water or steam. The anus, hands, and mouth of the patient should also, immediately after an evacuation, be washed with a disinfectant—in this case, however, weaker than has been indicated, say one part to two thousand of mercuric chloride and water, for the anus and hands, and for the mouth water slightly acidulated with sulphuric acid. The hands of the attendants, also, should be washed with the same weak solution of mercuric chloride after handling the patient. Under no circumstances should the attendant, or anyone else, eat in the same room with the sick; and, as an invariable rule, which should be scrupulously observed, no person who has been in direct contact with the sick or with any of his personal effects should eat without first thoroughly cleansing and disinfecting the hands.

B. *With regard to healthy persons exposed to the infectious principle of the disease:* Remembering what has already been remarked concerning an increased susceptibility to infection by reason of disturbance of the digestive apparatus, it is strenuously insisted upon that all causes, of whatever nature, of disturbance of the functions of the stomach and intestines, should be studiously avoided: such as intemperance of all kinds, either in drinking or in eating; all irregularities of personal habits, either as to time of meals, occupation, exercise, or hours

of sleep; all emotional excitement should be removed; in short, every circumstance which experience has shown may exercise a disturbing influence upon these important functions should be carefully guarded against; the use of articles of food which are liable to occasion indigestion, or to cause an unusual or unhealthy activity of the digestive apparatus, should be interdicted; children should be carefully prevented from indulging in exhausting sport or exercise, and should be carefully shielded against intemperate weather; it is all-important that the functions of the skin should be kept regular and active by a sufficient amount of seasonable clothing by day and by night; particular care should be taken that revulsions of blood, produced by chills, from the cutaneous surface to the internal organs, especially the abdominal, may not occur, and in this connection it is strongly recommended that the abdomen be enveloped at night in a broad band of flannel, in order that during the restlessness in sleep the skin of the abdomen may not be exposed to the direct action of the air; cold baths should be avoided; the surface of the body should be washed at not too frequent intervals, by sponging with tepid water, and afterward dried thoroughly by vigorous rubbing with a rough towel; meanwhile, the body should be protected from draughts. Irregularity and intemperance in eating and drinking have already been alluded to. It is important that the imbibition of large quantities of water or other fluids at intervals between meals be avoided, for, if there were no other reason, it is a well-known physiologic fact that in the intervals of digestion the reaction of the gastric juice is neutral and sometimes even slightly alkaline. If contaminated water or milk should be swallowed in large quantity during this interval, it is clear that the probability of the living infecting agent passing through the pylorus into the small intestine is greatly increased, and the possibility of an attack much enhanced. In a house in which a cholera-patient is suffering, the children and all others not in attendance upon the sick should be kept out of the sick-room. But if, as often occurs among the class of people who are mostly the sufferers from cholera—the poor and the squalid—there be only one common room for the use of the family, no one should on any account be permitted to occupy the same bed as the sick, and during the day, as also during the night, all should avoid as much as possible contact with the sick-bed.

Attention to the preparation of food is a matter of extreme importance to all persons exposed to the infection of cholera, and especially to children. It goes without saying, that the materials consumed should be perfectly fresh and sound in every respect, and that the water and milk employed should be absolutely free from the living infecting principle,

as well as pure and healthy. As a guaranty against the possibility of infection by means of water or milk, both should be thoroughly boiled before use, and, as it is possible for the cholera-microbe to multiply rapidly both in water and in milk, the boiling should have been *very recent*. Coffee and tea should have been *recently* made and be *served hot*. All food should have been *thoroughly* and *recently* cooked. No raw food of any description, except possibly a moderate quantity of perfectly fresh, ripe, and absolutely clean fruits should be eaten. *Salads* and other such articles should be *interdicted*. Bread, as well as butter, should be carefully protected against the possibility of contamination. The culinary utensils and tableware should be *scrupulously cleaned with boiling water*.

The hygienic condition of the dwelling and its surroundings should be made as perfect as possible. All decaying animal or vegetable matter should be removed. The house-drains should be free and clean, and flushed with a sufficient amount of water at intervals, preceded by the emptying therein of a liberal quantity of strong solution of copperas in water, or of a 5 per cent. solution of carbolic acid, or equal strength of chloride of lime. The cess-pits and the privies should be kept clean and free from odor by unslaked lime, large quantities of copperas, or other similar inexpensive materials. The supply for *drinking-water* should be *scrupulously guarded from possible contamination of any kind*.

Among the precautions to be enforced against a threatened attack of Asiatic cholera in anyone, but especially in the young, one of exceeding importance is watchfulness over the condition of the alimentary canal. In a large number, perhaps in the majority, of instances, an attack of cholera is preceded for some hours or days by derangements of the digestive apparatus, such as distress or a sense of fulness or heaviness in the stomach, of gastralgia or nausea, or of occasional vomiting; or the disorders may be limited to the intestines only, and be manifested by vague general abdominal uneasiness, or slight fleeting pains, or active peristaltic movements which can be seen or felt through the abdominal walls; and all or any of these may be associated or end with diarrhea, and sometimes with a tendency to disproportionate prostration; or, the disorders of the stomach and intestines may be combined; or, the attack may be fulminant without such warnings.

If these disturbances of the alimentary tract are promptly discovered and remedied, many an attack of cholera will be thereby avoided. In such cases, absolute rest in bed, and, if possible, also total abstinence for a day or two from food, should be enjoined; if there be reason to infer the presence in the stomach of undigested food, a single emetic dose of ipecac should be administered; or if there

be visible peristaltic movements of the intestines, or diarrhea, these should be controlled respectively by small doses of opium in a convenient form, and of such drugs as salol, naphthalin, or analogous compounds.

What has thus far been said applies especially to individuals; but, unfortunately, in this disease public interests and relations must also be regarded, and from this standpoint, *so long as there are in the locality only a few scattered cases of the disease*, the utmost efforts should be made to prevent the establishment of an epidemic.

It is obvious that the evacuations of the intestinal canal of the attacked should, without loss of time, be carefully disinfected. But by no means all suffering from an attack of cholera infectiosa are, especially in the earlier stages of the disease, so ill that they cannot be out of bed, and even out of doors engaged in their ordinary vocations. Yet experience has abundantly proved that those suffering "a walking attack" carry in their intestinal canal the infectious agent of cholera, and are capable, under favoring circumstances, of establishing a center of infection wherever in their movements they may chance to void those intestinal contents. Hence the necessity of temporarily restricting the liberty of all inmates of the infected dwelling and of all persons in close communication with it, whether at the time of infection they are evidently suffering or not. All such persons should be isolated and kept under strict surveillance until the extreme limit of the period of incubation (say, five or seven days) has fully elapsed, *counting from the commencement of the surveillance*. If during these five days no sign of even a slight or "walking attack" has made its appearance, and finally if a culture-test, as already described, of the feces has indicated the absence of the comma-bacilli of Koch, the individual temporarily restrained of his liberty both for his own benefit and for that of the public, may without danger be again restored to the full enjoyment thereof.

THE ABILITY OF THE STATE TO PREVENT AN EPIDEMIC OF CHOLERA.¹

By BENJAMIN LEE, M.D.,
SECRETARY OF THE STATE BOARD OF HEALTH OF PENNSYLVANIA.

THERE are two ways of preventing an epidemic of Asiatic cholera: the one, by a perfect system of quarantine to prevent a single germ of the disease from entering the country to be protected; the other, by the enforcement of enlightened and strict sanitary regulations to remove all conditions favorable for the propagation of the germ should it enter. This latter is the English way.

¹ Read before the Philadelphia County Medical Society, September 14, 1892.

The system of seacoast quarantine in Great Britain, as has long been known to American sanitarians, is defective in the extreme. Recent disclosures have developed the fact that there is really no power in the Government to enforce quarantine. The great British doctrine of free trade seems to have been pushed to its utmost limit to include disease as well as other commodities. This system may prove successful. It may be possible to introduce the germs into a community and to have everything in such an admirable condition of cleanliness and such strict enforcement of local precautions that the germs will quickly die. This seems to have taken place in England during the past fortnight. But to accomplish this result there must be a complete and thorough sanitary organization of the country, so that no foot of ground escapes frequent sanitary inspection and no accumulations of filth are allowed to remain upon its surface or beneath the surface for an hour.

In England, every householder is liable at any moment to a visit from an agent of the Board of Health. If this agent finds the least infraction of the rules of the Board, so much as a piece of bone lying on the ground which should be in the garbage receptacle, he whips out his tablet and makes a note of the fact and says, "You are fined so many shillings." The fine is paid on the spot. Such is the sanitary organization of England, with the Local Government Board at its head, controlling the whole system. Such, unfortunately, is not the sanitary organization of all of the States of this Union. Hence it would be folly for us not to make every effort to render the first plan successful. Evidently neither should be relied on alone. The one should supplement the other.

The subject assigned to me by your Directors may be considered from two points of view: the ideal and the actual—the ideal based upon conditions which are entirely practicable and possible; the actual based upon conditions now existing in this State.

The ideal conditions for defence against cholera are:

First. Thorough sanitary organization of the State, no portion of its territory to be without its legally qualified health-officer, having a district not too large for faithful and frequent personal inspection; such officer to be well paid for his services, and to be subordinate to a county or district health-officer, also properly remunerated, and all to be controlled by the central health-authority of the State.

Second. A sanitary code at least as perfect and strict as that of a large city—Philadelphia, for example—for the entire State.

Third. A national quarantine service, with ample

powers and means, having a station at the mouth of every large bay or river on which are ports of entry, as remote as possible from centers of population, with occasional refuges, remote from channels of commerce, to which ships and effects demanding an unusual amount of disinfection can be remanded if necessary.

On this question of the importance of a uniform and comprehensive system of coast-defence under national régime I feel very strongly.

I may be pardoned for alluding to a paper which I read before the National Conference of State Boards of Health in 1888, in which I answered affirmatively the question, "Should the National Government Assume Control of Quarantine at All Ports of Entry?," to a paper which I read before the Section on State Medicine of the American Medical Association, in the same year, entitled, "Should Not the National Government Defend Our Ports against the National Enemy, Contagious Disease?" and to a "Report of Inspections of the Quarantine Stations of the Middle Atlantic Coast," made to the National Conference of State Boards of Health, at the close of which I suggested the following evils as incident to the disjointed system of State and municipal quarantines:

"First. Want of uniformity in quarantine regulations.

"Second. Conflict of authority, owing to the methods of appointing officials.

"Third. The entire lack of appreciation on the part of local Legislatures, whether State or municipal, of the importance of the expenditure of considerable amounts of money in order to render quarantines at once efficient and inoppressive.

"Fourth. The tendency on the part of local civic authorities to limit their responsibility to the protection of their own city."

The fourth condition which I would propose is: A municipal quarantine service for all large cities, by which vessels can be subjected to a second scrutiny whenever circumstances render it necessary.

I have no hesitation in saying that, with the foregoing conditions, in view of our present accurate knowledge of the habits and habitat of the cholera-bacillus and its mode of propagation, for which thanks are due, among others, to our distinguished fellow-member, Dr. Shakespeare, the ability of the State to prevent an epidemic of cholera is absolute.

Now let us come to actual conditions, which are what more nearly concern us at the present moment: What as to the ability of this particular State of Pennsylvania to exclude the disease or to prevent its becoming epidemic?

I placed as first among the essentials of immunity, sanitary organization of the State and a State sani-

tary code, because I believe them to be the most important. In these grand fundamental requirements of an enlightened civilization I regret to be compelled to say that Pennsylvania is absolutely deficient. Notwithstanding the repeated importunities of the Board of Health, the Legislature persistently declines to legalize boards of health or health-authorities of any kind outside of large cities. The only appeal that our people living in towns, villages, and rural districts have when their neighborhood is invaded by epidemic disease, or when suffering from some intolerable nuisance that endangers the public health, is to the State Board of Health. It is not difficult to understand how utterly impossible it is for a single Board, with one paid officer, and four thousand dollars a year to work with, to give any adequate attention to the complaints of three million people scattered over an area of forty-five thousand square miles.

The constant cry that comes up to the ears of the Board is: "Our village is in a most filthy condition; our children are dying of diphtheria; typhoid fever is rife; and we are entirely without health-authorities of any kind. Will you not come and help us?"

In its efforts to render aid in such cases the Board finds itself at once hampered by the fact that the State is almost entirely without sanitary statutes. In order to enforce its orders it must have recourse to the slow process of the law and trial by jury. In other words, the State of Pennsylvania is without a sanitary code.

These being the conditions, the ability of this State to prevent cholera from becoming epidemic, should its germs find their way into its densely populated and filthy mining towns, is more than doubtful. Once let it become epidemic along the course of the Schuylkill River, and Philadelphia may repeat the experience of Hamburg.

In the absence, then, of any proper provision for sanitary officers, the Governor of this State was eminently justified in urging the people to unite in voluntary organizations, and appoint sanitary committees for the purpose of putting their respective towns in a state of sanitary defence. This they are doing to an encouraging extent, but, of course, they labor under a great disadvantage from lack both of authority and of experience.

Regarding our third condition, the outlook is extremely encouraging. The United States Quarantine Station at the mouth of Delaware Bay is in many respects well equipped. Its deficiencies are being rapidly made good. Its officers are efficient and experienced. It is remote from any large center of population, and of sufficient extent to accommodate a large number of suspects. I have strong faith that the enemy will not pass this outer

line of coast-defence. Should it do so, it will be met by the united forces of State and city at the Lazaretto, and, while the unfortunate contiguity of that station to this city and to the city of Chester and a populous neighborhood must be admitted, yet the energy and decision with which the Board of Health of this city and the State Quarantine authorities connected with this port are meeting the emergency, and supplementing the altogether inadequate and antiquated plant at the Lazaretto with modern appliances and increased accommodations, afford reasonable ground for hope that the onward march of the disease will be finally checked at that point.

Our fourth condition, therefore, while by no means all that could be desired, still exists in such a state of preparation that we may place considerable reliance upon it.

As I understand the situation, then, our danger here in this city lies not so much in an open invasion by way of the Delaware River as in a covert movement by flank and rear, through other ports, or possibly through merchandise introduced at this port, aided by the coöperation of those powerful allies, filth and absence of sanitary law and organization.

To guard as far as possible against this indirect introduction of the disease through other ports, the State Board of Health has promulgated the following order:

"To Transportation Companies:

"In accordance with Regulation III of this Board, in regard to the sanitary supervision of travel and traffic, which reads as follows:

"Upon satisfactory information of the approach to or transit through the Commonwealth of Pennsylvania of infected persons or goods, it shall be the duty of the Secretary, as executive officer of the Board, to cause the same to be stopped at the State line, or, if found within the limits of the State, to cause such persons or goods to be removed from cars, stages, vessels, boats, or other conveyances, and securely isolated and disinfected; and he may, if in his judgment the emergency is such as to demand it, call a meeting of the Committee on Travel and Traffic, to which his action shall be submitted, with his reasons therefor, in writing. But, in cases coming under the jurisdiction of national or municipal quarantine authorities, he shall coöperate with said authorities in all such action."

"Notice is hereby given to the officers of all transportation companies, whether by land or by water, that any transportation company shall be declared contraband of quarantine which shall introduce, land, or transport within the borders of this Commonwealth of Pennsylvania any person suffering from Asiatic cholera or cholera (so-called), or any person who shall develop said disease within four full days after having been so introduced, transported, or landed within the borders of said Commonwealth by such company.

"If a railroad company be thus declared contraband of quarantine its trains shall be stopped at the State line, and held until inspected by an inspector of this Board and declared by him free from the danger of conveying

the contagion of Asiatic cholera into this Commonwealth.

"If a steamboat, canal, or other navigation company, its boats shall not be allowed to enter any dock, tie up at any wharf, or by any means land passengers, baggage, or merchandise until it has undergone like inspection, and been declared free from danger of introducing the said contagion into the Commonwealth of Pennsylvania.

"By order of the Board,

"BENJAMIN LEE, M.D.,

"Secretary and Executive Officer."

As a further matter of precaution, the Board has issued the following instructions:

"To the Officers of Railroad and Steamboat Companies in Pennsylvania:

"The principal railroad companies operating in this State have adopted admirable regulations for the sanitary care of their cars and premises under ordinary conditions. The State Board of Health has already taken occasion to commend these, as well as the readiness of these companies to coöperate with it in efforts to protect the public health. In view, however, of the threatened invasion of Asiatic cholera, it is important to enforce these regulations with unusual strictness, and to take certain additional precautions.

"The Board therefore orders:

"First. That all water-closets and urinals in cars be provided with proper water-tight receptacles for retaining deposits, instead of allowing them to fall on the track, and thus endanger water-supplies; said receptacles to contain disinfectants, and to be renewed at certain intervals in such places and in such manner as may be determined upon for the most perfect protection against infection. The adoption of the precaution should be begun with second-class and immigrant cars, and extended as rapidly as possible to first-class cars.

"Second. Should the discharges of the sick fall upon seats, floors, or platforms of cars or stations, they should be first disinfected, and then removed in closed buckets, and the soiled places then disinfected and thoroughly cleaned.

"Third. All cars coming from infected places shall be disinfected before sweeping, and the sweepings disinfected and burned.

"Fourth. All water-closets and urinals in steamboats and canal boats shall be provided with proper water-tight receptacles for retaining deposits instead of allowing them to fall into the water, which is in most instances the supply of drinking-water for some center of population. Such receptacles shall always contain disinfectants, and shall be emptied at the end of each trip in such manner and in such place as may be designated by the local authorities.

"Fifth. All accumulations of filthy clothing and rags shall be at once disinfected and burned.

"Sixth. Should cholera become epidemic, the drinking-water furnished for the use of passengers should be boiled, and, so far as possible, should not be obtained from places in which the disease exists.

"By order of the Board,

"BENJAMIN LEE, M.D.,

"Secretary and Executive Officer."

The campaign throughout the State and on the borders being thus outlined, we come to perhaps the most important question of all, where the ability of the State is concerned, viz., the sinews of war. Much work of the utmost importance should be done under the superintendence of the State Board of Health. But whence is the money to come to pay?

The laws make provision for the expenditure of the State's funds with the utmost lavishness for the protection of property; but, when nothing more valuable than human life is concerned, there is no authority for the disbursement of a single penny from the treasury beyond the meager appropriation to the State Board of Health already mentioned.

THE MORBID ANATOMY AND DIAGNOSIS OF CHOLERA.¹

BY JAMES TYSON, M.D.,
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THE picture of the essential morbid anatomy of cholera is neither complex nor varied, but repeats itself with tolerable simplicity and uniformity. A comparison with the more condensed accounts to which the proceedings this evening are comparable leads me to believe that its essentials do not include much more than is covered by the description of an autopsy made by myself at the Philadelphia Hospital in 1866 or 1867.

The patient was a woman, aged twenty-nine, who died after an illness of twenty-four hours.

The examination was made one hour after death, and the central portions of the body were still warm.

Abdomen. The stomach was filled with turbid liquid, grayish-white in color, resembling rice-water. In this the microscope discovered numerous columnar epithelial cells, isolated and aggregated, forming flakes; also disintegrating muscular fasciculi, doubtless from beef-essence taken during life. The mucous membrane of the stomach appeared much congested, and the distribution of the larger vessels could be readily traced in consequence of their being filled with thick blood. My notes read that the papillated appearance ascribed to enlargement of the solitary follicles was present, though less distinct than that described in published reports of post-mortem appearances.

The epithelium was detached in some places, in others intact.

The liver was natural in size, but congested and darker-hued than in health. Its cells, as determined by microscopic examination, were normal.

The kidneys were normal in size, but appeared dark-hued and congested. The tubules and lining cells were normal.

Thorax. Both lungs were firmly attached by old adhesions; the lower lobe of each was hypostatically congested, but otherwise they were normal.

The heart was normal in size, but its walls were somewhat flaccid. There was a small, currant-jelly clot in the right ventricle, and the remainder of the cavity, as well as the left ventricle, was filled with dark, liquid blood.

The mucous membrane of the small intestine was also much congested; the bowel contained no fluid, but was distended with gas. On its surface lay

numerous patches or flakes of greenish color, which on microscopic examination proved to be epithelium. The papillated appearance produced by enlargement of the lymphadenoid follicles was everywhere present.

Microscopic examination showed the villi largely denuded of epithelium, but not completely, and in places a considerable surface was intact.

Such is the description of the appearances found at an autopsy twenty-five years ago, one of several made at that time, and, with some changes, it may be regarded as a type of those cases. In most cases the intestines also contained the rice-water liquid; in some this was absent from the stomach. The appearances are not materially different from the macroscopic morbid features of the more recently described cases. The additions that modern studies have made are histologic rather than macroscopic, but they are of infinite importance. In addition to a cellular infiltration, more or less dense, of the mucosa, the submucosa, and even the serous coat, there is found the *comma-bacillus* in immense numbers in the contents of the intestine, more rarely in the stomach, and in protracted cases in the intestinal wall, in its follicles, and even deeper tissues.

The congestions, referred to as present in the lungs and mucous membrane of the stomach and intestines in my case, would seem to indicate that some reaction had been established, as these organs are commonly anemic when death takes place during collapse. The same is true of the liver and kidneys, which are more frequently described as pale and flaccid. The heart more frequently has its right cavities filled with thick, dark blood, while the left side is empty. In many instances, the lungs also present an appearance more or less characteristic, being shrunk and small and lying back in the thorax, as though collapsed. Under these circumstances they are like the other tissues, empty of blood, except in their dependent portions, which are the seat of a hypostasis such as described in my own case. They have been compared by Parkes to fetal lungs, and by Sutton the two organs were found to weigh but twenty ounces, as compared with forty-five ounces when death occurred after reaction had been established—that is, after the blood had again occupied the pulmonary artery and its branches. In some cases this collapse is but partial, as when interfered with by adhesions, as also was found to be the case in my own patient.

Such appearances could, of course, occur in death from hemorrhage, and, after all, the only essential condition is the presence of rice-water fluid in the stomach or intestine, or in both, containing the "comma" bacillus and desquamated epithelium. The last, to which the earlier descriptions attached

¹ Remarks made at the meeting of the Philadelphia County Medical Society, September 14, 1892.

great importance, is now generally regarded as post-mortem in origin. The flakes thus produced probably represent also the patches of lymph described by the older authors.

If death take place during the stage of imperfect reaction, the mucous membrane is much more frequently found congested and of a dark-red color, from the hyperemia and extravasation of blood. At such time, too, the solitary glands are conspicuous, as also are Peyer's patches, and the same denudation of epithelium from the villi and elsewhere is present. The only signs that suggest an inflammatory process are the slight cellular infiltration of the intestinal walls and the enlargement of the solitary follicles.

In the matter of *diagnosis* it is well known that, so far as symptoms are concerned, cases of cholera-morbus, cholera nostras, or sporadic cholera, as we may prefer to name it, have occurred with symptoms absolutely identical with those of true cholera, including the fatal termination. It is not worth while, therefore, to attempt to contrast the clinical features of true cholera with those of cholera morbus, with which alone it is likely to be confounded. By bacteriologic investigation only, including also cultivation on artificial media, can a given case be identified with absolute certainty. Dr. Abbott informs me, however, that fifty-two hours is the minimum time required to complete such a bacteriologic diagnosis. Further, such investigations can only be made by those who are expert, and provided with proper facilities. Such expertness and facilities, moreover, are not found in the hands of general practitioners, and the bacteriologic investigation is therefore of limited application.

As to microscopic examination of the dejecta, which is more feasible for the practitioner, it may also be said that if the examination reveals a preponderance of curved bacilli, comma-shaped, and sometimes joined end to end so as to form figures somewhat resembling the letter S, and again appearing in longer threads, we may feel justified in considering the case one for careful study by bacteriologic methods. Although there are found in the alimentary tract other bacilli the morphology of which is much like that of the cholera-bacillus, they are not numerous.

How, then, shall we know a case of vomiting, serous diarrhea, severe colicky pains, followed by collapse, to be a case of cholera? In this country, where such a thing as endemic cholera is unknown, it goes without saying that any isolated case, even if fatal, cannot be one of true cholera, unless there be traceable some connection with an acknowledged focus of cholera elsewhere. Second, such communication must have taken place within the period of incubation required for the development of a

case—say within six days. Of course, such communication need not be a personal one. It may be by clothing, merchandise, and probably even by letter.

These conditions being fulfilled, the patient suffering with the symptoms of cholera must, for the time being, be regarded as a case of the true disease, and isolated until the bacteriologic investigation can be made, but the rapid occurrence of similar cases increases the probability of its being true cholera, and finally establishes its certainty. Yet, local epidemics of cholera-morbus do sometimes take place, severe and grave in character, due to local causes, and favored by extreme and long-continued heat. Thus it is still a question whether the recent epidemic of cholera that prevailed in Paris in May, June, and July of this year, was true cholera or cholera-morbus, and there seems much reason to believe it to have been the latter, notwithstanding the prevalence of true cholera.

There is one very important etiologic rather than clinical difference in the two diseases which is also of great diagnostic value, and that is this: that almost invariably cholera-morbus is traceable to a severe and irritating exciting cause, such as a meal of indigestible fruits or vegetables, or imperfectly cooked or decomposing fish or shell-fish; while cholera comes on without any such cause, or succeeds trifling derangements of digestion, which in other than cholera-seasons pass away without harmful results. As a rule, too, the symptoms of cholera-morbus are much less severe than those of true cholera, and the matters first vomited are the undigested matters that have acted as the exciting cause, succeeded by green, bilious matter. The discharges from the bowels are also at first more of a bilious character; and above all, the mortality is much less serious. Indeed, recovery is the rule. Yet, as already stated, these distinctions alone are not to be relied upon.

SUGGESTIONS AS TO THE PROPHYLAXIS AND TREATMENT OF CHOLERA.

BY D. D. STEWART, M.D.,

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THE important discovery of the illustrious Koch of the probable *contagium* of true cholera, thus endowing the disease with an individuality the most important characteristics of which could be readily ascertained, will doubtless lead eventually to a successful therapy based on antagonism of the products of the germ's activity, and perhaps finally to the practical extinction of the disease through a conferring of immunity by vaccination, and the adoption of comprehensive sanitation, aimed at eradicating the disease in its perennial endemic quarters.

As yet, however, little has been accomplished

practically by Koch's discovery in any direction other than that of hygienic prophylaxis. The specific leukomaïne of the spirillum has not been isolated nor has its antidote been ascertained. Little of practical importance has, indeed, yet been accomplished if we take no cognizance of the claims of Ferran, who, until Shakespeare's valuable *Report on Cholera in Europe and India* recently appeared, was generally viewed as the merest charlatan, and the active principle of whose inoculating material was said to consist rather of a substance resembling croton oil than a pure culture of cholera-bacilli. If Ferran's assumptions are reliable, it seems curious that no effort has been made outside of Spain to utilize so important a discovery as the conferring of more or less persistent immunity against cholera by inoculation. This is in all probability due to an unfortunate prejudice existing against Ferran, who apparently was more desirous of pecuniary reward as a result of his discovery than of lasting fame as a philanthropist, and who, therefore, surrounded his methods with sufficient secrecy to invite suspicion of chicanery.

Very recently the experiments of Brieger,¹ undertaken on the same lines as those of Ferran, indicate that the latter's claims as to the production of artificial immunity in animals and man to the toxic action of the cholera-germ were not extravagant, and that we are on the eve of their complete confirmation. Unfortunately, Brieger has not yet extended his experiments to man, though this will likely soon follow. However this may be, at present a protective vaccination is not available as a means of meeting a visitation of cholera, so that other less certain measures must be sought of securing individual immunity.

A knowledge of the peculiarities of the contagium of cholera permits us to adopt certain safeguards of more or less value, depending upon the thoroughness with which they can be carried out. It is now generally believed that infection occurs through no other channel than the mouth, and usually originates through the ingestion of contaminated water (or watered milk). But the greatest caution as to drinking only thoroughly and recently boiled water, even when one does not come in contact with cholera-patients, and has, therefore, no opportunity of soiling the hands with the dejecta, will not always protect from the disease, as there are many unforeseen channels during an epidemic through which the food or hands may become contaminated.

¹ Brieger (*Deutsche med. Woch.*, 1892, No. 31) has recently succeeded by inoculation in rendering guinea-pigs absolutely immune to virulent cultures of cholera-bacilli, a much smaller dose of which had a prompt lethal effect on non-prepared pigs. The method consists in the intra-peritoneal injection of comma-spirilla cultures prepared on watery extract of calves' thymus or in beef-bouillon.

As the comma-spirillum is not spore-forming and readily perishes in acid media, the normal stomach acidity being sufficient to render it inert, it follows that though taken in some quantity with the food by an individual with a healthy digestive apparatus, infection is unlikely to occur.¹

It is for this reason that attention to gastric digestion is doubly indicated during an epidemic of cholera, and that, in addition to the caution necessary in the selection of non-contaminated food and drink, care must be paid to the amount and quality, that, apart from the danger of originating stomach or bowel disturbance, the germ does not escape destruction in the stomach should it gain entrance with the food. For a similar reason, in addition to the usual precautions now universally advised and generally known, as to the use of only thoroughly boiled water for drinking and for culinary purposes, and the care necessary in the selection and preparation of edibles, I should strongly advocate in all persons suffering from any form of gastric derangement attended with subacidity, whether it be gastric catarrh or the so-called nervous or atonic dyspepsia, the administration of hydrochloric acid in full doses after meals.

It is surprising to one unaccustomed to the use of the stomach-tube to find how many have lowered acidity who, in seeking advice, do not particularly complain of gastric symptoms. Among all, save the most robust, with undoubted vigorous gastric digestion, and those whose symptoms indicate a heightening of the normal gastric acidity, the use of hydrochloric acid would be advisable. As it is best given in gastric catarrh, so it should be prescribed here, in doses of about a teaspoonful of the dilute acid to eight ounces of water, taken in two or more portions at intervals of from ten to fifteen minutes, the initial dose being delayed until a half-hour after a meal in which amylaceous food forms a part. The acid here serves a double purpose of germicide and digestant.

As a further prophylactic, where it is suspected that infection may occur, despite the adoption of the commonly advised precautions and the attention given to gastric digestion, as through fluids ingested on the empty stomach, it has occurred to me that an insoluble, harmless antiseptic, such as hydronaphthol, would be especially indicated. This drug particularly has suggested itself in this connection, as I have now used it largely for seven years with the very best results, in cases of intestinal disturbance of various kinds induced by fermentative processes. The chief ill-effects of cholera are probably due to the action of the spirillum or its leuko-

¹ It is in this manner, as suggested by Koch, that Rochefontaine, in Paris, and Klein, in Bombay, escaped infection after swallowing—the one, pills of cholera-dejecta, the other, a liquid supposed to contain comma-bacilli.

maïne on the mucous membrane of the lower part of the ileum. Any agent tending to destroy or inhibit the development of the organism, that could be transported unchanged to this part of the bowel, there to exert its specific effect, would probably be of service both in preventing the development of the disease and in diminishing its virulence if it already existed.

Because of salol having a lethal action on comma-spirilla in the presence of pancreatic juice, which latter promotes its decomposition into salicylic acid and phenol, Loewenthal and others have urged its use both as a prophylactic and as a remedy for the developed disease. But since salol is promptly dissociated into its components by the action of the alkaline juices of the duodenum, and as the nascent salicylic and carbolic acids formed are quickly converted into soluble salts, it is unlikely that any portion of the drug will reach the lower segment of the ileum in quantity sufficient to exert a favorable effect, unless the alkalinity of the bowel is abnormally feeble, or doses are resorted to that are not compatible with safety.

Hydronaphthol is a comparatively insoluble substance, dissolving in the proportion of 1:100 of boiling water, which on cooling largely precipitates, leaving a solution about 1:1000. In cold water it is soluble to the extent of 1:2000. Its solubility in the bowel is unaffected by the action of the gastric or the intestinal secretions. Sufficient, however, enters into solution to exert a very powerful effect on putrefactive processes in these viscera. In doses of from three to five grains, three or four times a day, it readily checks a tendency to intestinal flatus, and though possessing no astringent property in itself, it will usually promptly jugulate a diarrhea, evidently through its antiseptic action. One of the most intractable cases of chronic dysentery I ever encountered, in which profuse hemorrhages from the bowel frequently occurred, as a result of intestinal ulceration, and which had resisted all ordinary treatment, including injections of silver nitrate solutions, was controlled with surprising readiness by the use of this medicament. Intestinal hemorrhage ceased within a few days after its first administration, and diarrhea soon after. So much confidence have I in this drug as an intestinal antiseptic, that I have used it for a number of years as the only medicament in nearly every case of enteric fever that I have treated, lately combining the Brand method with it. In no case in which it has been resorted to early in the course of the disease has the attack been a severe one, and few plunges have been necessary. My results having been so invariably good with hydronaphthol in intestinal affections of mycotic origin, I feel constrained to urge its trial as both a prophylactic against and a remedy in

cholera. A suitable dose would be from five to ten grains three or four times daily. As it has a slightly retarding effect on gastric digestion, but none whatever on duodenal digestion, it may be prescribed in keratin-covered pills, the coating of which is soluble in the alkaline secretion of the duodenum.

Hydronaphthol should be especially of service in early choleraic diarrhea, to check which a preparation of opium is usually given. Though there is no doubt, from an abundant experience, that opium cannot ordinarily be resorted to too early in cases of diarrhea during the prevalence of cholera, it must be borne in mind that, though often successful in checking an intestinal flux, presumably choleraic, treatment by it is but symptomatic, for opium can neither destroy the comma-bacillus nor retard its development; indeed, the experiments of Koch with guinea-pigs indicate that this drug actually favors the latter. Opium apparently acts in early choleraic diarrhea by checking the bowel-irritation originated by the spirillum, or its peculiar poison. Hydronaphthol would presumably act synergistically with opium by its lethal effect on the germ, or at least by inhibiting its multiplication and the production of its leukomaine.

NOTE.—My friend, Dr. A. A. Ghrieskey, assistant in Hygiene in the University of Pennsylvania, has kindly undertaken some experiments for me as to the action of aqueous solutions of hydronaphthol, of various strengths, on pure cultures of the comma-spirillum, a full account of which will be published in a subsequent issue of THE MEDICAL NEWS, they not having been carried to a finality sufficient to permit of a report at this time. I may, however, now state that the indications are favorable as to the utility of the drug in the direction stated.

MEDICAL PROGRESS.

Artificial Immunity to Cholera.—G. KLEMPERER (*Berlin. klin. Wochenschr.*, No. 32, 1892, p. 789) has succeeded in conferring immunity to Asiatic cholera upon lower animals by treatment with modified cultures of comma-bacilli. Guinea-pigs bore without detriment intra-peritoneal injections of 1 c.cm. of cholera-bacilli that had been kept for three days at a temperature of 104.9°. If the injection was repeated after an interval of twenty-four hours and two more injections, each of 1.5 c.cm., were then given, also at intervals of twenty-four hours, the animals on the fifth day survived injections of an otherwise lethal dose (1 c.cm. of a twenty-four-hour culture). Animals treated in like manner with cultures that had been kept for two hours at a temperature of 158° also survived lethal injections. Other animals that received a single injection of 2.5 c.cm. of cultures that had been kept for two hours at a temperature of 158°, likewise withstood a lethal dose two days later; it was determined that immunity existed seventeen hours after the protective inoculation.

While intravenous injections of 1.5 c.cm. of ordinary bouillon-culture of cholera-bacilli proved lethal to rabbits, a larger quantity was necessary if the culture had been kept for two hours at a temperature of 158°. Immunity to cholera was conferred upon rabbits by intra-

venous injections, in quantities short of lethal, of cultures of comma-bacilli that had been kept for two hours at a temperature of 158°. The best results were obtained by injecting 3 c.cm. of such cultures four times, at intervals of two days. Immunity was found to exist three days after the last injection. Guinea-pigs were rendered immune to cholera by inoculation with the serum of protected rabbits. The protection was most certain if the inoculation was practised three hours before the injection. When the inoculation was practised later, death was retarded, but not prevented. Among the rabbits rendered immune to cholera was one already immune to pneumonia. With the serum of this animal it was possible to confer upon guinea-pigs protection from cholera and upon mice protection from pneumonia.

The view is expressed that, unlike what takes place in man, intoxication and not infection results when cultures of cholera-bacilli are introduced into the gastro-intestinal tract of guinea-pigs, and dependent in degree upon the number of organisms introduced. It was ascertained that the degree of immunity necessary to protect from the intoxication resulting from the introduction of cultures into the alimentary canal had to be greater than was necessary to protect from intra-peritoneal infection. This immunity was, however, attained by two injections of 2.5 c.cm., with an interval of twenty-four hours, of the culture kept for two hours at a temperature of 158°, as well as by the injection twice, night and morning, of 2 c.cm. of the blood-serum of an immune animal.

Guinea-pigs to which had been administered by the mouth cultures of cholera-bacilli in quantities short of lethal, subsequently withstood lethal quantities given in the same way. This result corresponds with the immunity observed in human beings after an attack of Asiatic cholera. Cultures through which a constant current of 20 milliampères was passed for twenty-four hours were capable of conferring immunity in a manner and degree comparable to that conferred by cultures kept at a temperature of 158° for two hours.

Successful Evacuation of a Cerebellar Abscess.—DEAN (*Lancet*, No. 3596, p. 250) has reported the case of a girl, fourteen years old, who for five years had a purulent discharge from the right ear. For three weeks there had been pain in the head, especially in the mastoid region, where the skin was boggy and dusky. Consciousness was perverted and there was marked bilateral optic neuritis. The right tympanic membrane had been destroyed, and the middle ear was filled with flabby granulation-tissue. The mastoid process was opened and about half a dram of pus evacuated. The bone was curetted and the cavity irrigated. The lateral sinus was found to be pervious. Improvement followed the operation, but some days afterward, symptoms of intracranial compression appeared: headache, drowsiness, diminished frequency and intermittence of the pulse, depressed temperature, vomiting, derangement of respiration, and dilatation of the pupils. After the head had been shaved and sterilized, a semicircular flap of skin, just above and behind the right ear, was made, and the periosteum reflected. The pin of a trephine was placed an inch behind and a half inch above the center of the external auditory meatus, and a disc of bone,

three-quarters of an inch in diameter, was removed. The dura was incised and a small hydrocele-trocar was inserted six times in different directions in the temporo-sphenoidal lobe, but no pus escaped. A few drams of cerebro-spinal fluid escaped from the lateral ventricle. The lateral sinus was found to be pervious. It was now decided to explore the right lobe of the cerebellum. By means of forceps, sufficient bone was chipped away downward and backward for half an inch to expose the lateral sinus and the dura below it. The latter was incised and the trocar introduced. At the second insertion pus escaped. A large trocar was then inserted, and finally a pair of sinus-forceps. More than an ounce of pus escaped. A rubber drainage-tube was introduced and the dura mater carefully laid over the surface of the brain, but not stitched. The usual outer dressing was applied. After the operation the condition of the patient progressively improved and the optic neuritis subsided. A slight purulent discharge from the right ear persisted.

The Surgery of the Biliary Passages.—KÖRTE (*Samml. klin. Vorträge*, 1892, No. 40) has reported the interesting features of twenty-two cases in which operations were performed on the biliary passages. Twelve cases were operated on for gall-stones; eleven of these were in women, all of whom had borne children. Six cases presented dropsy of the gall-bladder, in five associated with gall-stones. In four cases there was empyema of the gall-bladder, three with stones. In three cases the ductus choledochus was occluded by stones. Three cases died: one of choledoch-occlusion, of asthenia; one of suppuration of the liver; one of empyema of the gall-bladder, with calculi and carcinoma of the liver; none in consequence of the operation. In some cases multiple operations were necessary, but in all, the functions of the biliary apparatus were conserved, and in none did a fistula remain. Cholecystotomy was performed at one sitting five times; in two sittings twice. Cholecystotomy is considered the best procedure for empyema of the gall-bladder, for disease of the bladder-wall, as well as for occlusion of the choledoch duct. In case of gall-stones, without disease of the walls of the gall-bladder, and if the common duct is patulous, opening the gall-bladder and evacuation of its contents, followed by suture, are preferable. Cholecystotomy is the most rational procedure in most cases of calculi in the gall-bladder. In four patients with empyema of the gall-bladder serious sequelæ developed; in each, the bacterium coli commune was found in the bladder. One case of hepatic abscess, with perityphlitic suppuration, was successfully operated on. In seven cases subphrenic abscess was found; six of the patients recovered. In three cases hydatid cysts of the liver were opened. Of two cases of gunshot injury of the liver one recovered after laparotomy and tamponade; the other died from injury of the colon and peritonitis.—*Fortschritte der Medicin*, 1892, No. 12, p. 470.

The Diagnosis of Cholera.—LASER (*Deutsche medicin. Wochenschr.*, No. 32, p. 793) recommends the following diagnostic procedure for the recognition of the stools of a patient suspected to be suffering from an attack of cholera. A number of tubes of peptone-bouillon or peptone-gelatin are inoculated with the stools of the sus-

pected case, and a like number of tubes are inoculated with the stools of a presumably healthy person. Placed in the thermostat, in the course of twenty-four hours the tubes inoculated with the cholera-stool present a characteristic odor absent from the others. Care must be taken not to use too much fecal matter, as the odor of this may obscure the odor developed. If also a film has formed, and if in the course of forty-eight hours a reddish color can be produced by the addition of sulphuric acid, the diagnosis is absolute.

A Traumatic Neurosis.—COESTER (*Berliner klin. Woch.*, No. 31, 1892, p. 776) has reported the case of a lad, seventeen years old, in which, following a contusion of the ring-finger of the right hand, anesthesia of the right upper extremity, and of the right side of the head, face, and trunk to the level of the seventh rib, appeared. Tactile sensibility, thermic sensibility, and the sensibility to pain were abolished. The muscle-sense was preserved and there was no loss of power or wasting. The condition disappeared after six weeks of application of strong currents by means of the faradic brush.

The Differentiation of Hysteria and Epilepsy.—From a study of the urine in cases of hysteria and epilepsy, respectively, BOSC (*Compt.-rend. hebdom. des Séances de la Soc. de Biol.*, No. 28, p. 723) has determined that the chemical constitution and the toxicity of the twenty-four hours' urine are below the normal in cases of hysteria, and above the normal in cases of epilepsy. The urine passed immediately after an epileptic attack, in contrast with that passed after a hysterical attack, presents a diminution in the alkaline phosphates and an increase in the earthy phosphates.

Paradoxical Patellar Reflex.—EICHHORST (*Centrabl. f. klin. Med.*, No. 31, 1892, p. 641) has reported a case of acute anterior poliomyelitis in process of recovery, in which a tap upon the patellar tendon was not followed by contraction of the quadriceps femoris, but by contraction of the tibialis anticus, extensor hallucis longus, and extensor digitorum communis longus, at a time when voluntary power was beginning to return in the previously paralyzed but now responding muscles. The contraction was active, but slow, protracted, and vermicular.

Conservative Treatment of Articular Tuberculosis.—BIER (*Beilage zum Centralbl. f. Chirurgie*, 1892, No. 32, p. 57) has treated more than twenty cases of articular tuberculosis, by means of continuous passive hyperemia, with speedy and marked improvement. The idea was suggested by the pathologic experience that hyperemic lungs are rarely, if ever, tuberculous. The desired end is attained by wrapping the joint well to a point just below the seat of disease, while above a rubber tube, protected by a soft bandage, is wound around the part.

Retro-pharyngeal Abscess After Influenza.—FISCHER (*Wiener medicin. Presse*, No. 30, p. 1204) has reported the cases of two infants, eleven and six months old, respectively, in each of which, following an attack of what was considered to be influenza, a retro-pharyngeal abscess developed, recovery following incision and evacuation. In neither case could disease of the vertebræ be detected.

THERAPEUTIC NOTES.

The Ice-cradle.—SOLTAU FENWICK (*Berliner klin. Wochenschr.*, No. 31, 1892, p. 767) describes a device that has been employed at the London Fever Hospital for ten years in the treatment of cases of typhoid fever, and, more recently, of cases of pneumonia attended with hyperpyrexia. An ice-cradle is made by suspending over the patient, in bed, by means of iron frames, a number of zinc buckets, kept half-filled with ice and inclosed in a light covering. The patient is covered with a muslin sheet, and provision is made for the circulation of the air in the cradle. The temperature of the patient is to be taken at least every four hours, and if it falls to 100° the apparatus is to be removed. If a sense of chilliness appears, hot bottles are to be applied to the feet.

For Oxyuris Vermicularis.—Enemata containing naphthalin are recommended for the expulsion of oxyures vermiculares. For a child:

R.—Naphthalin gr. xv-xx.
Olei olivæ 3x-3ij.—M.
S.—As an enema.

For an adult:

R.—Naphthalin 3j-3jss.
Olei olivæ 3ij-3iij.—M.
S.—As an enema.

MINERBI.

Creasote by Enema.—In the treatment of pulmonary tuberculosis GRASSET (*Novv. Montpel. Méd.*, No. 25, p. 500) administers creasote by the bowel, morning and evening, preceded by a simple enema. An emulsion is made as follows:

R.—Tinct. opii m.jss.
Creasoti m.xv.
Olei olivæ 3ijss.
Vitell. ovi No. j.—M.

—*Gaz. Méd. de Paris*, No. 31, p. 371.

Hot Rectal Injections have been effectively employed for the relief of painful affections of the abdominal and pelvic viscera, such as renal colic, ovarian neuralgia, pelvic peritonitis, and dysmenorrhea. The water used must have a temperature of from 105° to 112°; a pint is at first carefully injected; after this (mixed with fecal matter) has been expelled, another pint is injected; a third injection is practised, and the fluid is usually retained.—FORER, in *Correspondenzblatt für Schweizer Aerzte*.

Salol for Cholera.—Based upon laboratory and animal experimentation, LOEWENTHAL (*Deutsche medicin. Wochenschr.*, 1892, No. 32, p. 738) has recommended salol in the treatment of cholera. Thirty grains should be given as the initial dose, followed hourly or half-hourly by doses of from seven and a half to fifteen grains. Gonzalez is quoted as having treated fifty-three cases of cholera in the manner outlined, with but three deaths.

THE MEDICAL NEWS.

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SATURDAY, SEPTEMBER 17, 1892.

REVISION OF THE CODE OF ETHICS OF THE AMERICAN MEDICAL ASSOCIATION.

We take for granted the acquiescence of the overwhelming majority of our readers in the necessity for a Code of Ethics; for the reasons given in our editorial on the subject in THE NEWS of July 16th, and for those additionally advanced in the admirable letter of DR. COWAN, in THE NEWS of August 2d. The further question then arises: Is it wise to revise the present Code of the American Medical Association? We think the general sense of the profession would answer that while the Code, as it now stands, is an excellent guide for professional conduct, it is wise to subject it to revision for two reasons: (1) It contains much that is unnecessary and useless; and (2) a respectable number of members of the profession demands its revision and is dissatisfied with certain of its provisions. This dissatisfaction has expressed itself, in the State of New York especially, to such an extent that one of the most important sections of the Code—one, indeed, which has done more than any other to maintain the dignity of the profession—has been formally repudiated. The antagonisms produced by this act of repudiation on the part of the Medical Society of the State of New York have led to bitter dissensions, and created for a time a serious division in the pro-

fession. This division, however, is now practically healed, as far as the individual relations of members of the profession in New York are concerned; but the fact that many of those who, through the State Society, have repudiated the Code are permanent members of the American Medical Association puts the Association in a false and illogical position if their membership be recognized, or excludes certain able, eminent and honest co-workers if the laws of the Association be rigidly enforced.

One familiar with the Code contest in New York nine years ago, in looking back, must recognize the fact that this contest led to action that the majority of the partisans of the two sides would now willingly modify. The supporters of the Code would now be willing to see it stripped of useless provisions and redundant language, to say the least. The advocates of the "new code," or certainly the majority of its adherents, would now hardly support a provision which permits unrestricted consultation with homeopaths, eclectics, physio-medicals, advertisers *et id genus omne*. Indeed, most of the so-called "new code" members of the profession in New York now decline to consult with irregular practitioners, and make no exception even in favor of homeopaths.

It is time for the adherents of scientific medicine to come together and stand on common ground. It is now worse than useless to question the motives of those who either rebelled against or defended the Code, except in so far as an inquiry into motives may promote harmony and tend to restore mutual confidence. The American Medical Association should now endeavor to settle the ethical question permanently, and devote itself hereafter to scientific work. The Committee appointed to revise the Code should try to frame a document which will be cheerfully adopted by physicians generally, both individually and through the action of medical societies, leaving agitators and belligerents in the background. We believe that the great majority of those who have repudiated the Code have no desire to degrade the profession to the level of those classed as irregular practitioners, or to meet such practitioners on terms of professional equality; but rather that they honestly believe in the right to render their services to all, whether the patient be at the moment under the care of a physician or of an irregular practitioner. We believe, also, that the defenders of the Code resisted its modification on the highest moral and

professional grounds. If, then, it be conceded (1) that a Code is necessary and (2) that revision of the present Code is wise, the further question arises: In what respects is revision necessary?

All must admit that the phraseology of the existing Code can be much improved in the direction of conciseness. What is needed is a short and clear-cut set of rules for the guidance and direction of the profession, which may be referred to to decide delicate questions in regard to the relations of physicians to each other and to the public, and which, if adhered to, will provide against indiscretions into which members of the profession may thoughtlessly fall. A code of ethics is not for the public and has nothing to do with the "obligations of patients to their physicians" or the "obligations of the public to physicians." It has nothing to do with acts on the part of physicians that render them amenable to penal law. An ideal code is one that will sharply draw the line between the physicians, properly so-called, and irregular practitioners, will secure fair and honorable treatment of younger practitioners by their elders, and will indicate to the young physician, struggling for existence and professional success, both his rights and his obligations.

The code need not, and should not, include general exhortations and maxims that go without saying. In the existing Code there is much of this which well deserves the criticism that it has received. We should strike out such matter as the following: The "duties of physicians to their patients," which refer to promptly obeying professional calls, treating patients with tenderness, firmness, etc., unnecessarily frequent visits, form of prognosis to patients and friends, abandonment of hopeless cases, the desirability of promoting consultations, general directions for the "support of professional character," pecuniary acknowledgments, and all matter that is indefinite and general. It seems unnecessary, also, to say anything about the services of physicians to each other. This is regulated by custom and circumstances. Article III of the Code, "Of the duties of physicians as respects vicarious offices," refers to a question also regulated by custom and circumstances, and often a matter of special arrangement, except when a physician is called in cases of emergency. These eliminations would leave the Code with all of its useful provisions and reduce its length more than one half.

The Code should clearly and distinctly define the attitude of the profession and provide certain rules

for professional conduct. We throw out as tentative suggestions what seem to us the most important points, and invite full and free discussion of the various suggestions, *seriatim*.

1. Every member of the profession knows what constitutes a "regular" or an "irregular" practitioner, but this should be clearly defined.

A physician in regular standing is one legally authorized to practise medicine, who assumes no sectarian designation, such as homeopathist, eclectic, etc., and who does not advertise or otherwise violate the rules of professional conduct embodied in the Code of Ethics.

An irregular practitioner is either one not legally qualified to practise medicine, or, if legally qualified, one who assumes to practise some special general system, or assumes some sectarian designation, as already indicated, or who advertises or violates, intentionally and habitually, the rules of professional conduct laid down in the Code of Ethics.

2. A physician should not meet in consultation with an irregular practitioner or be associated with such an one in the treatment of a patient; but he may properly examine a patient and give an opinion or advice to the patient or friends, or perform a surgical operation, in the case of a patient under the care of an irregular practitioner, without consultation or professional association with such practitioner.

3. A physician should obey, when practicable, all calls to cases of emergency, but should resign the case to the regular attendant as soon as possible. In case several physicians meet in cases of emergency, the patient or friends should be required to select which physician it is desired to retain.

4. A consulting physician should not displace the regular attendant during the progress of a case, unless with the attendant's full consent given in writing, and should avoid taking the place of the regular attendant as the family physician.

5. All consultations, when practicable, should be held in private.

6. The statement of the results of a consultation may be made to the patient or friends, either by the regular attendant or any participant in the consultation whom the regular attendant shall select.

7. Every consultant should be afforded the opportunity for a full examination of the case under consideration.

8. All discussions and opinions expressed in consultations should be kept confidential, if so desired

by the attending physician; and no private communications should be made by a consultant to the patient or friends.

9. Consultants should avoid trivial or unnecessary changes in treatment, and all changes in treatment should be made in the consultation.

10. In case of serious and irreconcilable differences of opinion in a consultation, the regular attendant should be allowed to retain the case, and the consultant or consultants who differ from him in opinion should withdraw, unless, at the request of the patient or friends, and with the consent of the attendant, the treatment be radically changed.

11. It is not decorous or professional for a physician to make friendly visits to a patient under treatment by another physician, except with the full knowledge and consent of the latter; and it is not professional for a physician to express any opinion in regard to the diagnosis or treatment of a case under the care of another physician, except in regular consultation.

12. It is unprofessional and unjust to other physicians to render gratuitous professional services to those able to pay suitable fees, except in cases in which personal relations or obligations render such a course practically unavoidable.

13. All differences between physicians, when they cannot be amicably adjusted by personal conference, should be referred, when practicable, to arbitration by physicians or medical societies, and recourse to courts of law should be avoided as far as possible.

14. A physician should never disclose any fact or circumstance ascertained by him, or communicated to him in his professional capacity, in regard to a patient, his family or friends, except with the full consent of the parties concerned.

15. The following acts on the part of a physician are unbecoming and unprofessional:

a. The granting of "interviews" on professional subjects to representatives of newspapers.

b. The sending of voluntary communications on professional subjects to newspapers.

c. The payment of commissions on fees for professional services.

d. The reception of commissions from pharmacists, surgical-instrument makers, opticians, or others on prescriptions or recommendations.

e. The taking out of a patent or the assumption of a trade-mark on any remedy, article of food or drink, hygienic preparation, surgical, obstetrical or scientific instrument or apparatus.

f. The giving of a certificate or recommendation for any remedy, article of food or drink, hygienic preparation, surgical, obstetrical or scientific instrument or apparatus, which can be used as an advertisement or part of an advertisement.

g. The use or recommendation of any medicinal preparation of which the exact composition or working formula is not published to the world.

h. "Resort to public advertisements or private cards inviting the attention of individuals affected with particular diseases; publicly offering advice and medicine to the poor gratis, or promising radical cures; or to publish cases and operations in the daily prints, or suffer such publications to be made; to invite laymen to be present at operations; to boast of cures and remedies; to adduce certificates of skill and success, or to perform any other similar acts."

16. Physicians holding public professional offices under a city, county, or State appointment or the General Government, may, in their official capacity, communicate, through the medium of newspapers, matters of interest to the public.

17. Physicians may issue for publication bulletins or certificates of disability, in cases of illness of public personages, with the consent of the parties concerned.

These rules of conduct are simple, distinct, and easily understood. If some such Code as suggested were adopted by the American Medical Association and recommended for adoption to the different State Societies, it is probable that it would meet the views even of the Medical Society of the State of New York. Should this happy result follow the labors of the Committee on Revision of the Code of Ethics, it would be difficult to find a logical basis for dissensions on questions of medical ethics.

MATTEISM EXPOSED.

MOST of our readers will remember that for several years a gigantic quackery-fraud has been carried on in England and on the Continent by the proprietors of the so-called cancer-cure of an Italian Count, MATTEI. We cannot understand why the enterprise was never transplanted to our hospitable shores. Our own smart folk have invaded England with less success than MATTEI & Co. would have found here.

For the great vogue of the MATTEI delusion in England, MR. STEAD, the famous London journalist, was largely responsible. There is no doubt as to the sincerity of the enthusiastic sponsor. Having been the means of robbing the people of millions of

dollars, temporarily discrediting medical science, and, after a false hope aroused, plunging thousands into despair, let us hope this "friend of the people" may have learned some little modesty.

MR. STEAD had never consulted any physician as to the pathology or therapeutics of carcinoma, had not an idea about the subject himself, and does not seem to have heard of the fact that no amount of ignorant human testimony as to the cure of disease has a particle of scientific value. He therefore (if the logic is clear) gave the "cure" the most extraordinary free advertisement, and the public rage and private profits both grew to great proportions. But the sincerity of MR. STEAD has proved the very means of exposing the humbug, and his shame must be as great as the disgust of the Matteists.

Chiefly through the editor's over-enthusiasm, a commission of eminent English physicians was appointed to supply and examine undoubted cases of carcinoma treated by the quacks. Great were the difficulties, and many the ludicrous obstacles interposed by the Matteists to seem willing to submit to the tests and yet to avoid the inevitable exposure that would follow genuine investigation. The story is told by DR. POTTER in the *British Medical Journal* of August 13th.

Five cases were finally accepted, and the treatment by the "electric potions" carried on for a year, the disease, of course, in each case growing steadily worse. A most laughable attempt was made to shirk the responsibility by the plea, often used in similar cases, that the members of the examining commission were "unbelievers," and with this specious nonsense even MR. STEAD's faith gave way, and for all sensible people the bubble was thoroughly pricked—but not, be it well noted, for the quack or his poorest dupes.

All that any sensible man can expect to do with quackery is to reduce it to its proper proportions, and allow it its proper *clientèle*. The electric fluid of the Matteists was analyzed and found to be simply, solely, nothing but pure water. The danger of this fraud was in its respectability and popularity. The apparently highest and most intellectual people, LADY PAGET, for example, were taking it up. Even members of the medical profession were, willy-nilly, becoming quiescent or acquiescent, some even using the "remedies." Now the danger is past, and the fraud will settle to its proper level, like astrology, and clairvoyance, and faith-healing, and all that.

We have lately been sagely lectured by an es-

teemed contemporary as to the unwisdom of ethical zeal against acknowledged popular and powerful medical humbuggery. The quacks, it is lamely said, will die a natural death, and opposition but stimulates them to further and renewed life. The example of the exposure of Matteism is most pat, and we leave our complacent critic with the lesson to ruminate upon. Progress and civilization, including the ease, knowledge, and usefulness of his own life, have been made possible only by "reformers" who saw the little truth, but who also saw the enormous untruth of his fallacious advice.

CHOLERA.

THUS far, cholera has been kept from our shores—unless the announcement be verified that five fatal cases have been detected in New York City. What the ultimate outcome of the present threatening will be is yet uncertain. The experiences of the present time ought prove extremely useful in anticipating a recurrence of the events of the past few weeks. The necessities of an adequate quarantine have already been pointed out—if, indeed, they needed pointing out. The extension of the powers of the President of the United States, defining his right to suspend immigration in times of threatened danger from infectious disease, without the necessity of at the same time placing an embargo on commerce, must also be a subject for early legislative enactment.

There are two other aspects of the present situation that demand special consideration. In the first place, it seems scarcely less than criminal that more than a thousand apparently healthy persons should have been kept on board pest-ships, together with those suffering from cholera, exposed to the risk of infection, under unfavorable hygienic conditions, with water of doubtful quality, without provision for change of linen, unable to sleep from fear or anxiety, and cut off from communication with their friends. Certainly these unfortunate tourists, particularly in the case of American citizens, were entitled to protection, as well as those threatened with danger on shore. Immediate provision should have been made for the landing of the apparently well that had been even remotely exposed to the danger of infection, and these could soon have been released if no symptoms of disease manifested themselves among them.

In the second place, the action of some of the steamship companies in accepting immigrant passengers from infected districts after the quarantine

of twenty days had been announced cannot be too severely condemned. As has been suggested by one of the newspapers, it would not under such circumstances be too severe a punishment to turn back to their sources of departure entire boatloads. It will thus be seen that it is absolutely necessary for the national authorities to dedicate a suitable and sufficient extent of ground for the purpose of isolating the sick from the well.

It is earnestly to be hoped that the lessons of the present situation will not pass unheeded by those to whom is confided the responsible duty of protecting the health and welfare of the people of the United States, of relieving them of unnecessary anxiety and of preventing loss of life and loss of trade.

CORRESPONDENCE.

THE REVISION OF THE CODE.

To the Editor of THE MEDICAL NEWS,

DEAR SIR: I do not desire to occupy your columns with a long discussion upon the value of our Code, but simply to emphasize both its necessity and importance. The Code was adopted by the American Medical Association in 1847, and for almost half a century has been the rule and guide of the regular profession in this country. The educated physicians of that day felt the necessity of a Code, to define distinctly our "duties to our patients," "to each other," and "to the public;" and for another reason, if not the most urgent—to defend them from the army of irregulars and quacks that were springing up all over the land, claiming equal rights, and seeking recognition from a generous public.

Nearly half a century has elapsed since the adoption of the Code, and the number of "pathies" and "isms" has increased *pari passu* with the regular profession and, I believe, because so large a part of our profession is either ignorant of the Code or does not carry out its provisions. Abandon it, and at once the greatest anarchy will prevail. There would be then no need for our colleges to raise the standard of medical education and to require a three or four years' course, instead of two, as formerly, for our country is already being overrun with medical colleges and schools of every grade and denomination. How much soever thoroughness and competency may be desired in the medical profession, they cannot be attained if we abandon our Code, for there will be admitted to our ranks both the uneducated and the unworthy. Rather abandon all scientific methods and medical schools than admit a Babel of therapeutics. We may as well admit the fact that we are yet young America, and the day has not yet arrived when we may lay aside this *lex supremis*. Admit, if you please, that among regularly educated physicians no code may be necessary, and that every individual who enters the profession does so from pure and generous motives, and will be actuated alone by a lofty spirit to do right and avoid doing wrong, and yet their remains

a necessity for our Code, for our duties to each other and to the public are peculiar and intricate.

Laws are not made for those who would instinctively obey them, but for those who would disregard them but for the penalty attached. Our profession is largely made up of those who enter it from pecuniary motives, and your "Gideon's Band" must be small compared with this large class of workers.

Our Code is but the reflection of one of the greatest laws, human or Divine, "Do unto others as you would that they do unto you." Such a law needs no revision, and you may only mar by "adding to" or "taking from it." Examine, for a moment, the motives of those who would revise and really abandon our Code—for this is the question. Not long since the Medical Society of the great State of New York withdrew her allegiance to the American Medical Association, because of the article in our Code forbidding recognition and consultation with homeopaths. Will our Committee on Revision insert in our Code "*similia similibus curantur*?" or "that to be curative a drug must be capable of producing in the healthy system symptoms similar to those for which it is prescribed, and that it must be given in doses so small that the physiological effects cannot be perceived?" Or will they recommend that these aphorisms be added to our Pharmacopeia? Our dispensaries must then read that dynamization of medicines is proper, and that the millionth or decillionth part of a grain is more powerful than the whole! Shades of Wood and Bache, Chapman, Dunglison, and a host of fathers in medicine! Such are the teachings of the followers of Hahnemann, and constitutes one of the greatest fallacies of the nineteenth century. Whilst regular medicine is progressive and conservative, we dare not admit to its ranks the various "isms" that exist in our land and are anxiously seeking recognition. For almost a century homeopathy has striven for supremacy, and has attempted to build itself up upon the mistakes of the regular profession rather than upon scientific attainments. We are told, however, that Hahnemann's system has been greatly modified and improved by modern homeopaths, and that their practice is more rational. If so, why call it homeopathy?

Let them abandon their creed rather than that we should abandon our Code, and we can admit them to the regular profession only upon scientific attainments, and not *pro favori*. This branch of the profession has many attractions, and among its votaries are found the opulent and influential. It may well be understood how many of the regular profession are clamoring for consultation when large fees may be expected. Eclecticism, Keeleyism, and the "faith cure" may also be admitted, and then surely we will have no need of a code. Rather abandon the profession than our Code, which should be regarded as the Magna Charta of American physicians.

F. M. GREENE, M.D.

GREENE DALE, KY.

NEWS ITEMS.

Obituary.—DR. JOHN J. REESE, the eminent toxicologist, died September 4, 1892, at Atlantic City, seventy-four years old. He graduated from the art department of the University of Pennsylvania in 1836. Three years

later he graduated in medicine, at the same time receiving the Master's degree. In 1859 he was elected treasurer of the Philadelphia County Medical Society. He was president of the Medical Jurisprudence Society in the years 1886 and 1887. For a number of years Dr. Reese was visiting physician to St. Joseph's Hospital and Girard College. He was also medical supervisor of the Philadelphia Orphan Asylum from 1858 to the time of his death.

He was professor of Medical Chemistry in the old Pennsylvania College from 1854 to 1859. In 1865 he was elected professor of Toxicology and Medical Jurisprudence in the University of Pennsylvania. From 1861 to 1865 he was an Assistant Surgeon in the United States Army. Among the published works of Dr. Reese are "An Analysis of Physiology," "The American Medical Formulary," "A Manual of Toxicology," and "A Text-book of Medical Jurisprudence and Toxicology." He edited the seventh American edition of Taylor's "Medical Jurisprudence."

An Army Medical Board will be in session in New York City, N. Y., during October, 1892, for the examination of candidates for appointment to the Medical Corps of the United States Army, to fill existing vacancies.

Persons desiring to present themselves for examination by the Board will make application to the Secretary of War, before October 1, 1892, for the necessary invitation, stating the date and place of birth, the place and State of permanent residence, the fact of American citizenship, the name of the medical college from which they were graduated, and a record of service in hospital, if any, from the authorities thereof. The application should be accompanied by certificates based on personal knowledge, from at least two physicians of repute, as to professional standing, character, and moral habits. The candidate must be between twenty-one and twenty-eight years of age, and a graduate from a regular medical college, as evidence of which his diploma must be submitted to the Board.

Further information regarding the examinations may be obtained by addressing C. Sutherland, Surgeon-General U. S. Army, Washington, D. C.

The Philadelphia Polyclinic will open its tenth Fall and Winter Term on Monday, September 26, 1892. Dr. John B. Roberts will deliver the Introductory Address, on "Injuries of the Hip-joint," at eight o'clock on the evening of the same day, in the hall of the college, 1818 Lombard Street, to which members of the profession are cordially invited.

Ontario Medical Journal is the name of a new candidate for professional favor, the first number of which bears the date of August. We fear that the *Journal* has started out wrong, not only in accepting questionable advertisements, but also in the publication of "reading notices."

Krafft-Ebing has been unanimously recommended to succeed Meynert, deceased, in the Chair of Psychiatry in the University of Vienna.

University of Berlin.—Virchow has been elected Rector of the University, and Jolly, Dean of the Medical Faculty.

BOOKS AND PAMPHLETS RECEIVED.

The Diseases of the Stomach. By Dr. C. A. Ewald, Extraordinary Professor of Medicine at the University of Berlin, Director of the Augusta Hospital, etc. Authorized Translation from the Second German Edition, with Special Additions by the Author, by Morris Manges, M.D. With 30 illustrations. New York: D. Appleton & Co., 1892.

Cardiac Outlines for Clinical Clerks and Practitioners, and First Principles in the Physical Examination of the Heart for the Beginner. By William Ewart, M.D. Cantab., F.R.C.P., Physician to St. George's Hospital, etc. Illustrated. New York: G. P. Putnam's Sons, 1892.

Two Cases of Extra-uterine Pregnancy. By J. A. Dickson, M.D. Reprint, 1892.

Opening of the Mastoid Process. By Harry Friedenwald, M.D. Reprint, 1892.

The Treatment of Consumption. By William T. Bishop, M.D. Reprint, 1892.

The Science and Art of Midwifery. By William Thompson Lusk, A.M., M.D.

A View of Modern Surgery, from the Standpoint of a General Practitioner. By James S. Green, M.D. Reprint, 1892.

Athetosis, with Clinical Cases. By Archibald Church, M.D. Reprint, 1892.

A Contribution to Spinal-Cord Surgery. By Archibald Church, M.D., and D. W. Eisendrath, M.D. Reprint, 1892.

A Case of Associated Streptococcus Infection of the Vermiform Appendix and Fallopian Tube. By Hunter Robb, M.D. Reprint, 1892.

Nervo-vascular Disturbances in Unacclimated Persons in Colorado. By J. T. Eskridge, M.D.

The Influence of the Doctrine of Contagion upon the Death-rate from Tuberculosis in the City of Philadelphia. By Lawrence F. Flick, M.D.

Biographical Sketch of D. Hayes Agnew, M.D. By DeForest Willard, M.D.

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